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Dog Sports: A Mixed Methods Exploration of Motivation in Agility Participation

A Thesis
Presented to the
School of Kinesiology
Lakehead University

In Partial Fulfillment
Of the Requirements for the
Degree of Master of Science
in Kinesiology

By Rodney Hulstein

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Acknowledgements

I believe that I am one of the luckiest graduate students because I managed to have Dr. Joey Farrell as my supervisor. I came to Lakehead not knowing any of the faculty or students and I am indebted to the fact that she agreed to supervise me. Without Dr. Joey Farrell I would be missing a few things in my life, including: an interest in dog sports, a well-trained dog, and a thesis. I would like to thank Dr. Joey Farrell for keeping me on track throughout this entire endeavor and for her never-ending guidance. I would also like to thank my committee, Dr. Erin Pearson and Dr. Diane Walker, who have been a fantastic source of support and knowledge. Specifically, I would like to thank Dr. Erin Pearson for helping me produce a thesis document that I can be proud of and for always having her door open for questions. I would like to thank Dr. Diane Walker for her expertise on qualitative research, guidance on this topic, and for her keen eye when it comes to the big picture. Finally, I would like to thank my family, friends, and most of all my fiancé for their many sources of support throughout the past 3 years.

Abstract

Background/objectives: Obesity and physical inactivity are on the rise amongst Canadians. Dog sports, agility in particular, may represent a form of physical activity that can help address the health issues that some of our population face. However, some individuals elect to participate in the sport less frequently while others engage in very high amounts of agility. Because increased participation in physical activity is good for health, an understanding of why some individuals engage in agility in high amounts needs to be developed. The study utilized the Self-Determination Theory (SDT) to investigate social/ environmental factors that influence the motivational sequence amongst adult agility participants to understand why some individuals engage in high amounts of the sport. Meeting the recommended amounts of physical activity is linked to improved health, so an exploration into how much physical activity is achieved through agility participation was also completed. Finally, the tenets of the SDT were utilized to assess how motivation influences physical activity behaviours. **Method:** The study utilized a cross sectional mixed methods design that involved two components., competitive adult agility participants were assessed ($n=233$) in component one. Participants filled out the SMS II, the BNSSS, a physical activity inventory, and a demographic questionnaire. *T* and *Mann-Whitney U* tests were used to identify differences in motivation and hierarchal regression analysis was used to predict physical activity behaviours from the tenets of the SDT. Seven individuals who participated in component one and engaged in higher amounts of agility participation were then interviewed for component two regarding the social/environmental factors that influenced their agility involvement. **Results:** Those who engage in higher amounts of agility had significantly higher levels of intrinsic motivation ($U_{(231)}=3321.5$, $Z=-3.178$, $p<.001$). On average, the sample expended 700kcal/week through their agility participation, effectively accruing 70% of the recommended amount of physical activity. Self-determined motivation was able to positively predict the amount of agility related energy expenditure, and the overall frequency of agility participation. Interviews in component two revealed ten social/environmental factors that influenced motivation, including: task/ego orientation, dog influence, family, friends, mentors, initial success, interspecies bond, challenge, and the venue. **Conclusion:** The findings revealed that, in this context, agility competitors experience high levels of self-determined motivation and need satisfaction, and those with higher intrinsic motivation tend to participate more. Social/environmental factors in the sport of agility may influence the motivational sequence and how much individuals participate. The present study provides a backbone for more experimental exploration to determine the relationships between the motivational sequence constructs and how they directly impact physical activity behaviours.

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Introduction and Review of Literature

Health Profile of Canadians

Low rates of participation in physical activity pursuits attest to the current and high rates of obesity among both Canadians and Americans of all ages (Flegal, Carrol, Ogden, & Curtin, 2010; Shields & Tjepkema, 2006; U.S. Department of Health and Human Services (USDHHS), 2012). Recent reports on obesity rates indicate that 24% of Canadian adults are obese, along with 34% of American adults (Shields, Carroll, & Odgen, 2011). Since obesity is associated with increased prevalence of hypertension, type 2 diabetes, coronary heart disease, stroke, osteoarthritis, some types of cancer, and psychological disorders, preventing the population from becoming overweight or obese is paramount (USDHHS, 1998). A main contributor to obesity is physical inactivity because it is highly associated with an imbalance between energy intake and energy expenditure (Shields & Tremblay, 2008). Colley et al. (2011) evaluated physical activity rates amongst Canadian adults and found sedentary behaviour occupied 69% of waking hours. These facts are further exemplified as only 17% of men and 14% of women are currently achieving the recommended physical activity guidelines of 150 minutes of moderate to vigorous physical activity (MVPA) each week (Colley et al., 2011).

In contrast to the health problems with overweight and obesity, individuals who achieve the recommended physical activity levels receive a variety of health benefits, including many physical, psychological, and social benefits (Garber et al., 2011; Ifedi, 2008; Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010; Warburton, Nicol, & Bredin, 2006). However, more research on physical activity pursuits is needed to help

the population reach recommended physical activity guidelines, increase their overall energy expenditure, and gain the health benefits provided by physical activity.

Benefits of Physical Activity

Physical benefits. The health benefits that are attributable to participation in regular physical activity are well documented in a number of thorough reviews, including Garber et al. (2011), Warburton et al. (2010), Warburton et al. (2006), and USDHHS (1996). All reviews indicated that participation in regular physical activity increases longevity and decreases the risk of developing diabetes, osteoporosis, some cancers (specifically colon and breast cancer), and obesity.

Warburton, Nicol, and Bredin's (2006) review examining the effects of physical activity on disease development and mortality concluded that regular physical activity is associated with primary and secondary prevention of cardiovascular disease. Warburton et al. (2006) also indicate that achieving even small amounts of physical activity (e.g., walking as little as one hour per week) is associated with a reduction in risk of developing cardiovascular disease. On the other hand, individuals who were considered 'fit' had up to a 50% reduction in risk (Warburton et al., 2006). It was also found that regular physical activity improves musculoskeletal fitness, which becomes increasingly important when considering Canada's aging population. Warburton et al. noted further that maintaining or improving musculoskeletal fitness can help elderly individuals maintain their independent living status for a longer period of time by eliminating or postponing the onset of disability.

Psychological benefits. Regular participation in physical activity contributes not only to physical health, but also to psychological health (Fox, 1999; Garber et al., 2011).

A number of review papers focused on the benefits of regular exercise reported that regular participation in physical activity can result in primary and secondary prevention of both depression and anxiety disorders (Fox, 1999; Garber et al., 2011; Surgeon General Report on Physical Activity and Health, 1996). Regular physical activity also elicits enhanced feelings of energy, well-being, quality of life, and improved cognitive functioning accompanied by a lower risk of dementia (Garber et al., 2011). Both Warburton et al. (2006) and Fox's (1999) review concluded that improvements in musculoskeletal fitness and physical activity are positively associated with psychological well-being and quality of life. Perceptions of physical self and identity can also become increasingly positive with regular participation in physical activity (Fox, 1999). Context specific perceptual changes can also extend to generalized changes in self, among individuals with low self-esteem (Fox). For example, if an individual believes that they are being more physically active, he/she may see a boost in overall self-esteem. It was also reported that exercise sessions of longer duration in brightly lit environments have the capacity to improve sleep and reduce psychological dysfunction.

Social benefits. Research has also addressed the social benefits that individuals can accrue through participation in regular physical activity. For example, Benedetti, Schwingel, and Lucena Torres (2011) noted that engagement in physical activity among older adults led to increased participation in other social groups (e.g., community groups, and retiree, residents' associations). Emmons, Barbeau, Gutheil, Stryker, and Stoddard (2007) indicated that individuals who are involved in higher amounts of physical activity also have stronger social networks (e.g., peers, friends, and family). The relationship between strong social networks and physical activity performance can

also be inversed because those who have strong social networks engage in higher amounts of physical activity. For example, Kouvonen et al., (2012) illustrated that strong social support can foster increased motivation for physical activity habits. Emmons et al. (2007) identified three different forms of social support: emotional, instrumental, and informational. Emotional support refers to the amount of love, sympathy, and understanding that is provided by confidants or other intimate interpersonal relationships (Berkman, Glassb, Brissette, & Seema, 2000). Instrumental support refers to help with activities of daily living (e.g., cooking, transportation, and cleaning), and informational support relates to advice and information that may be sought in any domain of life (Berkman et al., 2000). Furthermore, McAuley, Jerome, Elavsky, Marquez, and Ramsey (2003) noted that social support can lead to increased positive affect during physical activity and plays a role in the maintenance of regular physical activity. Litt, Kleppinger, and Judge (2002) had similar findings: social support was found to be a principal predictor of physical activity initiation and extended participation, which indicates that social support encourages adherence to physical activity programs.

Types of Physical Activity

Physical activity is a very broad term that can be applied to all forms of bodily movement that inevitably leads to a degree of energy expenditure (Caspersen, Powell, & Christenson, 1985). Physical activity can be separated into individual contexts such as occupational physical activity and leisure time physical activity. Leisure time physical activity is activity that takes place outside of a work environment and it can also be further subdivided into structured and unstructured leisure time physical activity (Mota & Esculcas, 2002). Structured physical activity represents organized endeavours such as

participation in a sport, club, or formal exercise program (e.g., organized sports such as soccer). On the other hand, participation in physical activity such as walking or other activities that are not guided by rules or taught by an instructor represent unstructured physical activity (e.g., walking with friends; Mota & Esculcas, 2002). Both structured and unstructured forms of leisure time physical activity have the capacity to provide certain physical, psychological, and social health benefits for individuals across the lifespan. The Canadian physical activity guidelines (Canadian Society for Exercise Physiology [CSEP], 2011) provide recommendations that help individuals and practitioners determine how much physical activity needs to be engaged in to receive health benefits.

Regular Physical Activity: The Recommendations

The Canadian recommendations (CSEP, 2011) state that all adults aged 18 to 64 should attain 150 minutes of moderate to vigorous physical activity (MVPA) per week to improve/maintain health and fitness. Expressed in calories, 150 minutes of MVPA each week equates to expending approximately 1000 kilocalories (kcal; Garber et al., 2011). In order to achieve this recommendation, adults can do: 30 to 60 minutes/day (150 min/week) of moderate exercise; 20 to 60 minutes/day (75 min/week) of vigorous exercise; or a combination of moderate-vigorous exercise (CSEP, 2011; Garber et al., 2011). In terms of older adults, the Canadian guidelines advise that those aged 65 years and older should also accumulate at least 150 minutes of moderate-intensity aerobic physical activity, or 75 minutes of vigorous-intensity physical activity each week (CSEP, 2011). It is further recommended that the accumulation of MVPA should occur over 3 to 5 days, instead of one or two long bouts of physical activity (O'Donovan et al., 2010). The physical activity recommendations can also be met by performing multiple

bouts of at least 10 minutes intervals throughout the day (CSEP, 2011). The central theme of all available physical activity guidelines is to discourage physical inactivity and provide insight into how to become physically active to maintain basic health.

It is clear that participation in regular physical activity through meeting the guidelines provides individuals with many physical, psychological, and social health benefits. Achieving the recommended guidelines can occur through many different modalities (e.g., sports, recreation, walking) that can be carried out in both structured or unstructured physical activity formats. Both of these forms of physical activity have the potential to provide participants with various benefits; however, participation in structured physical activities such as sports can also provide enhanced benefits of a social nature (Ifedi, 2008).

Participation in Sports

Health benefits. Sport represents a form of structured physical activity where individuals must abide by an agreed upon set of rules or regulations that govern the activity (Khan et al., 2012). It has been noted that individuals of all ages can participate in sports, and sports represent a viable way to contribute to the amount of physical activity that one achieves. Sport can positively contribute to an individual's physical activity profile (Caspersen, Powell, & Christenson, 1985; Ifedi, 2008; Khan et al., 2012). Specifically, Khan et al.'s (2012) study corresponds with many studies (Warburton et al., 2006; Warburton, et al., 2010) on the benefits of regular physical activity, in that sport participation itself can lead to a decreased all-cause mortality rate. Furthermore, reports from Ifedi (2008), and Bloom, Grant, and Watt (2005) revealed enhanced psychosocial benefits that participation in sport can provide individuals. From a psychological

perspective, sport provides participants with fun, relaxation, and personal growth (Ifedi, 2008). Socially, sport provides individuals with new friendships, acquaintances, more opportunities for social interaction (Ifedi, 2008), and improved social skills (Bloom, Grant, & Watt, 2005). Confirming these sentiments, a review by Street, James, and Cutt (2007) on organized physical recreation and its relationship to mental health also suggested that participation in structured recreation and sport can provide benefits of a psychosocial nature. Specifically, symptoms of depression, anxiety, and stress were combatted while self-esteem received a boost.

Life skills. Sport also has the capacity to facilitate learning of various life skills such as teamwork, communication, respect, honesty, fair-play, problem solving, and decision making, all of which can be transferred to other aspects of life (Bloom et al., 2005; Canadian Heritage, 2008; Government of Canada, 2004). Similar to the nature of social support in physical activity settings, Coalter (2005) indicated that the social nature of sport promotes the necessary level of frequency and adherence to physical activity programs. Lukwu and Guzmán Luján (2011), and Calvo, Cervelló, Jiménez, Iglesias, and Murcia (2010) suggested that sport provides an environment that satisfies the psychological need of feeling connected to others. Moreover, constructs of commitment, adherence, and continuance of activity have been positively linked to participation in sports because a feeling of belonging to a group will help keep individuals involved (Calvo, Cervelló, Jiménez, Iglesias & Murcia, 2010; Lukwu & Guzmán Luján, 2011).

Sport participation among Canadians. Despite all of the benefits that can be derived from participation in regular physical activity, many individuals choose not to engage during their leisure time (Brownson, 2005; Statistics Canada, 2010). Existing

literature has also shed light on the lack of adult participation in sport and recreation activities (Ham, Kruger, & Tudor-Locke, 2009). Lack of participation in sport has largely been attributed to factors such as lack of time and interest (Canadian Heritage, 2013). Rudman (1989) indicated that as individuals progress through the lifespan, levels of overall physical activity decrease. Ifedi (2008) noted that overall participation in sport is on the decline and adults aged 55 and over have the lowest participation rate in Canada. Women participate even less frequently than men (Ifedi, 2008).

Age and gender represent two relevant demographic factors in sport participation; older adults and women are the two populations who participate in sports the least (Ifedi, 2008). Reportedly, lack of time, lack of interest, age, and health and injury were the top reported answers for why older adults did not participate in sports (Ifedi, 2008). Dog sports are a form of sport that seem to defy the typical sport participation trends because they primarily attract women over the age of 45 (Baldwin & Norris, 1999). The term dog sport represents a range of activities where a dog and human work together to achieve a common goal while in a competitive environment (Reimer & Thomas, 2005). Dog sports are also available to individuals of all ages and can be enjoyed throughout the lifespan. Furthermore, dog sports can contribute to positive physical activity profiles while also bestowing additional health benefits gained from participation in sport and interaction with dogs (Baldwin & Norris, 1999). Considering the relatively high dog ownership rates of 29% to 38% across all age groups in Canada (Ipsos-Reid Corporation, 2001), and 39% in the US (The Humane Society of United States, 2012), dog sports represent a viable source of physical activity for many North Americans.

Benefits of Dog Ownership

In recent years, research has been conducted to examine the relationship between human health and dog ownership. Specific studies have expressed the overall benefits of dog ownership (Barker & Wolen, 2008; Knight & Edwards, 2008; Wells, 2007), effects of dog ownership on physical activity behaviour (Brown & Rhodes, 2006; Cutt, Giles-Corti, Wood, Knuiman, & Burke, 2008; Oka & Shibata, 2009, 2012; Reeves et al., 2011; Thorpe et al., 2006), and physiological effects of dog walking (Motooka, Koike, Yokoyama, & Kennedy, 2006). It has been illustrated that companion animals in general help owners cope with stress and achieve greater levels of physical activity (Barker & Wolen, 2008). Results from Wells' (2007) review on the effects of dogs on human health provided further support for dogs prophylactic and therapeutic effects on humans, which contribute to improved overall well-being and quality of life. Dog ownership has also been cited as providing psychological benefits of life enrichment, therapy, safety, security, protection, as well as social benefits (Knight & Edwards, 2008). Furthermore, dog ownership can impact individuals on a social level: McNicholas and Collis (2000) conducted a study on the effect dogs have on social interaction, and illustrated that dogs are catalysts for human interaction. McNicholas and Collis suggested the enhanced nature of social interactions might be a partial explanation for various health and wellness benefits that have been reported by previous human/dog studies. Street et al. (2007) discussed in their review how dogs increase physical activity behaviour similar to the use of "buddies" (workout partners) in physical activity settings, whereby both workout partners and dogs provide a source of social support to one another.

Along with the aforementioned mental and social benefits, dog walkers also accrue benefits to their physical health. For instance, a number of studies noted that dog owners have an increased likelihood of achieving the recommended levels of MVPA per week (Oka & Shibata, 2012; 2009; Reeves et al., 2011). Specifically, in a sample of 5,253 adults, Oka and Shibata (2009) established that dog owners achieved higher amounts of both moderate and vigorous physical activity, compared to non-dog owners and non-pet owners. Both Brown and Rhodes (2006), and Cutt, Giles-Corti, Wood, Knuiman, and Burke (2008) claimed that dog owners tend to participate in more overall physical activity when compared to their non-dog owner counterparts.

Walking with one's dog represents a form of leisure time physical activity that is more unstructured in nature. To date, the majority of research on physical activity participation with dogs has focused on walking as the central mode of interest (Brown & Rhodes, 2006; Cutt et al., 2008; Oka & Shibata, 2009, 2012; Reeves, Rafferty, Miller, & Lyon-Callo, 2011; Thorpe et al., 2006). Little research has addressed other forms of leisure time physical activities that can be enjoyed with a dog, including dog sports. Dog sports are one of many activities that one can participate in with his/her dog and they differ from many other human/dog activities because of the formal and structured nature of the sport. Dog sports are relevant from a physical activity perspective because they create opportunities for individuals to be physically active and contribute to the weekly amount of recommended physical activity (Baldwin & Norris, 1999). Additionally, previous research has hinted that dog sport participants may, in fact, also receive social health benefits stemming from sport participation and a plethora of psychological health benefits from interacting with one's dog (Baldwin & Norris, 1999).

Dog Sports

Fundamentals of dog sport. Dog sports, also referred to as cynological sports, are structured competitions that provide an opportunity to test the ability of human and canine to work together to achieve a common goal (Reimer & Thomas, 2005). There are countless clubs and organizations which organize dog sporting events but the Canadian Kennel Club (CKC), American Kennel Club (AKC), Agility Association of Canada (AAC), and the International Federation of Cynological Sports (IFCS) are among the organizations which govern national and international dog shows, trials, and competitions to ensure equitable competition (AKC, 2012a; CKC, 2013; IFCS, 2002-2006). These dog sport organizations sanction many different events, which include: agility, earthdog trials, conformation (dog show), herding, luring, obedience, rally, retrieving, and tracking for example. Dog sports vary in terms of the goal that is being targeted through teamwork, the number of humans and dogs involved, entrance eligibility requirements (e.g., dog type and size), equipment, and judging criteria (Reimer & Thomas, 2005). Both the AKC and CKC have many duties within their respective countries. Specifically, governance of performance events and shows is one of the main duties that both organizations provide. Duties extend as far as evaluating and monitoring rules, regulations, policies, and procedures that events must abide by in order to be sanctioned (AKC, 2012: CKC, 2013). Agility is one of the many official events that are governed by the AKC and CKC at the national level. Along with these organizations, the North American Dog Agility Council (NADAC), Agility Association of Canada (AAC), Canine Performance Events (CPE), and United States Dog Agility Association (USDAA) are also able to sanction agility events.

Previous research in the area of dog sports approached the activity from a serious leisure standpoint. That is, dog sports were viewed as a serious leisure pursuit (Baldwin & Norris, 1999; Gillespie, Leffler, & Lerner, 2002; Hultsman, 1998; 2012) and not as a sport pursuit as the term 'dog sports' would imply. However, Turco (2009), compared dog sport enthusiasts to serious endurance athletes because both types of athletes experience similar disruptions in their lives. Disruptions primarily stem from the significant amount of commitment the sports require, which affects family relations and financial stability. According to Ifedi (2008), Sport Canada defines sport as an activity that "involves formal rules and procedures, requires tactics and strategies, specialized neuromuscular skills and a high degree of difficulty and effort" (p. 14-15). Sport Canada also recognizes the competitive nature inherent in sports and the need for trained coaching personnel. Dog sports fall in line with this definition, and specific characteristics of dog sports will be addressed below utilizing the Sport Canada (Ifedi, 2008) definition of sport to determine the feasibility of this medium as a form of sport.

Participant demographics. The few studies that have examined participants who are involved in dog sports have noted demographic trends concerning the characteristics of participants. Specifically, research has found that the age of the vast majority of dog sport participants falls between 40 and 50 years (Baldwin & Norris, 1999; Gillespie et al., 2002; Hultsman, 1998; Riemer & Thomas, 2005). Furthermore, a number of the same studies also illustrate that as many as 75% of dog sport participants are female (Hultsman, 1998) while males are consistently under represented (Baldwin & Norris, 1999; Gillespie et al., 2002; Riemer & Thomas, 2005).

Research in the area of dog sports as yet to explore health characteristics (e.g., BMI) of the population that engages in dog sports.

Benefits of participation. Baldwin and Norris (1999) conducted a study that involved participants engaged in various dog sports describing meanings associated with AKC membership and participation in AKC events. Their study indicated that participation in dog sport competition provided participants with various benefits that can be described in five categories: (a) the dogs themselves provided positive affect for their owners; (b) participation was a source of enjoyment; (c) participants experienced enhanced relationships with their canine companions and with other competitors; (d) involvement of a dog in one's daily routine was a benefit, as the dog provided exercise and relaxation; and (e), the competitive nature of dog sports was a positive benefit because it allowed for the testing of learned skills. Based on these findings, it is clear that providing a source of exercise is only one of the benefits derived from participation in dog sports.

Dog sports represent a form of structured physical activity that seems to be most popular amongst older female adults (Baldwin & Norris, 1999; Gillespie et al., 2002; Hultsman, 1998; Riemer & Thomas, 2005). Baldwin and Norris (1999) found that participants involved in dog sports believed that their participation does, in fact, provide them with a degree of exercise, among other benefits. Baldwin and Norris included various dog sports and the primary purpose was not to explore the benefits inherent in any single dog sport but within dog sport culture as a whole. There are a number of specialty and breed specific events that human/dog teams can participate in, and each has a unique objective (AKC, 2011a). However, agility events/or trials are of particular

interest because of the mode of physical activity that is adopted in order to achieve the goal (2011b). The structure of agility and its goal, make it one of the more physically demanding dog sports that is recognized by dog sport governing organizations. From a health promotion perspective, the physical nature of the sport and the number of individuals involved make the sport a valuable one to examine.

A Closer Look at Agility

Agility is a timed obstacle course that a dog runs while being guided by a human handler (AKC, 2011b). In 2011, agility was considered one of the fastest growing dog sports with high participation rates. In Canada, agility attracted a total of 8,966 participants in 132 trials in the CKC and the AAC held over 100 additional trials as well, while the AKC alone reported 1,040,071 registrants in 2,629 sanctioned events (AAC, 2013; AKC, 2011; CKC, 2011). In comparison to other dog sport events (e.g., obedience, conformation), agility requires significantly more movement at varying intensities. The AKC (2012b) regulates agility trials under three types of agility classes: standard class, jumpers with weaves, and fifteen and send time (FAST). Exclusive to each class are different obstacles and objectives, which increase in difficulty and place emphasis on specific skills. Skills portrayed through agility trials include: reaction time, decision-making skills, strategy, speed, accuracy, and timing and distance of handling (AKC, 2012b).

Each agility class is further divided into three distinct levels of difficulty: novice, open, and excellent. In order to advance through the classes and levels of difficulty, participants need to obtain a title in their class. Each level of difficulty includes more obstacles that are increasingly challenging in nature, which requires a higher level of

dog handling skill. Individual team performances are scored based on the dog's time through the course and also the number of faults that were recorded by a judge (AKC, 2012b).

The goal of agility is to finish a designated obstacle course in the fastest time possible without incurring faults (AKC, 2012b). An obstacle course is comprised of traversable objects such as tunnels, A-frames, hurdles, and seesaws. To complete an agility course, human/dog teams (a human and a dog) must run the course while employing various tactics and strategies (e.g., speed, distance from handler, communication) to ensure that strengths are utilized while minimizing the use of weaker skills (AKC, 2011b). For instance, teams may be fast but lack technical ability (front or rear crosses) while other teams may be opposite. Obstacle courses are designed in a manner so as to ensure that they assess the handlers and dogs' ability to work together while challenging athletic ability (AKC, 2012b). Human/dog teams must also use specialized neuromuscular skills in the form of unique sets of hand signals and body gestures/positions that have been practiced and learned through training. Inevitably, completing a course as fast as possible and minimizing the amount of mistakes creates a sport that is high in difficulty and requires a high amount of effort. In order to be competitive at agility, participants must have developed and grasped all of the relevant aspects of the sport. Developing the necessary skills of the sport may take many months or years of training; hence, individuals at the competitive level demonstrate a degree of commitment (AKC, 2012b).

Agility competitions and training. The individual judges for an agility competition design the agility course, and determine the specific sequence of obstacles using a

number system (AKC, 2012b). For an allotted time, handlers are permitted to walk the course without dogs, and follow the numbers (each obstacle is assigned a number) in order to familiarize themselves with what challenges they will face. To thoroughly plan their handling strategy, some handlers will walk the course as many times as they can in the allotted time. When competition begins, each team runs the course individually and off leash (AKC, 2012b). Timing begins when any part of the dog crosses the start line, and is stopped when any part of a dog crosses the finish line. However, agility is not scored solely on time. A judge is also present on the course, and as a team runs, the judge will indicate to a scribe any fault that the team commits (AKC, 2012b). Faults include: running an obstacle out of order, incorrectly executing a jump or apparatus, or failure of a handler to control a dog (AKC, 2012b). The speed and technical aspects combined create a multi-faceted event that requires participants to spend much of their leisure time training in order to compete at desired levels.

Training for agility can occur in official training classes, similar to a team sport practice, which are offered at dog training centres, or teams can train independently outside of classes. Preliminary interviews conducted for a pilot study with competitive agility participants ($n=6$) investigating the impact of agility participation on individuals overall health and PA levels demonstrated that training for agility required both time and effort (Hulstein & Farrell, 2013). Self-reported data obtained from the same study indicated that the average training session lasted 45 minutes, and there was a large range from 10 to 90 minutes. On average, participants completed 3.5 agility training sessions per week (ranging from one to six). Overall, participants engaged in 158 minutes of agility each week during the summer months (i.e., April to September). The

self-reported intensity of an average agility training session varied from mild to vigorous but participants reported working at moderate and vigorous intensities more frequently than mild. Because this small-scale pilot data illustrated that training for agility contributes positively to the amount of physical activity participants achieved, a larger study and more comprehensive study is warranted. Moreover, the data also indicated large ranges in physical activity behaviours, specifically with regards to frequency and duration. Thus, assessing why individuals participate to varying degrees and achieve various amounts of physical activity is in order.

There are many characteristics of agility that are inline with Sport Canada's definition of sport (Ifedi, 2008). For instance, training and competing in agility requires individuals to jog and even run courses with their dogs, which requires a high degree of effort. Teams completing an agility trial obstacle course further require the application of tactics/strategies and specialized neuromuscular skills in order to be competitive, which creates various levels of difficulty as one progresses through the sport (AKC, 2012b). The aforementioned characteristics of agility allow the activity to be considered a sport, and as a sport, agility may also possess other inherent psychosocial health benefits that one can gain from participation. However, research still needs explore the exact nature of the 'exercise', and other health benefits gained through participation in dog sports, and agility in particular. Understanding how participation in agility impacts participants' levels of physical activity, and contributes to their meeting the physical activity recommendations (i.e., 150 minutes of MVPA/week; CSEP, 2011) will shed light on the sustainability of agility as an activity suitable for lifetime participation. Moreover, the

possibility of agility participants obtaining various health benefits that are attributable to participation in regular physical activity through this sport could also be illustrated.

Measuring Physical Activity Behaviours

The actual amount of physical activity that is achieved through agility participation can be captured through an analysis of physical activity behaviours (Kriska & Caspersen, 1997). Analyses can be conducted using objective measures, self-report measures, or a combination of both. Physical activity behaviours refer to the frequency, intensity, duration, volume, and type/mode of physical activity that one is participating in (Garber et al., 2011; O'Donovan et al., 2010; World Health Organization (WHO), 2010). Numerous studies have been carried out to validate various methods of measuring physical activity. Both Garber et al. (2011) and O'Donovan et al. (2010) conducted thorough reviews of studies that analyzed physical activity and health in order to further our understanding of how the two concepts relate.

Frequency. Frequency of physical activity typically represents the number of times an individual participates and is often measured on a weekly basis (Garber et al., 2011; O'Donovan et al., 2010). There is some evidence that individuals who have a lower frequency rate of one or two sessions of physical activity per week (weekend physical activity, or “weekend warriors”) also have a reduced risk of developing chronic diseases, indicating that some exercise is better than none (O'Donovan et al.). Physical activity recommendations state that individuals should engage in an accumulated 150 minutes of MVPA each week and this could be achieved in two days (O'Donovan et al.). However, engaging in physical activity for only two days a week involves five days of sedentary behaviour. The longer an individual remains sedentary the higher risks

he/she has of developing obesity and depression (O'Donovan et al.). In light of this, it is recommended that adults engage in physical activity three to five times per week (Garber et al.), or at least shorten the duration of each physical activity session and do them more often (WHO, 2010).

Intensity. Intensity of physical activity refers to the degree of effort that is being put forth during a bout of physical activity (WHO, 2010). Physical activity recommendations state that physical activity should be completed at a moderate or vigorous effort (WHO, 2010). Difficulty arises when measuring energy expenditure in physical activity, as it is a complex and multi-dimensional construct; as such, classifying effort as either moderate or vigorous in nature can be a challenge (Rennie & Wareham, 1998). There are also multiple methods of measuring the intensity of effort during physical activity and choosing the appropriate measure for the situation can be difficult. Intensity of physical activity can be measured in multiple ways that can be classified as either objective or subjective measures (Reilly et al., 2008), which are detailed below, and can be expressed in absolute or relative terms (WHO).

Objective measures. Methods of gathering objective calculations of energy expenditure during a given activity include: heart rate monitors, accelerometers, pedometers, metabolic carts, and global positioning system monitors (Andre & Wolf, 2007). The primary benefit of utilizing objective measures to assess physical activity is that they generally provide a more accurate estimation of energy expenditure (Reilly et al., 2008). Many objective measures have demonstrated validity, reliability, and also practicality (Reilly et al., 2008). The draw back of using certain objective measures is that some are not economical or suitable for larger studies (Kriska, 1997; Lagerros &

Lagiou, 2007). Lastly, some forms of objective measures have also been known to influence regular physical activity patterns in measured populations (Montoye & Taylor, 1984). Montoye and Taylor (1984) note that objective forms like portable metabolic carts may discourage participation in some forms of physical activity and alter participation in other forms.

Subjective measures. Subjective methods of measuring energy expenditure to assess physical activity include a plethora of self-report instruments (Valanou, Bamia, & Trichopoulou, 2006). For example, the Minnesota Leisure Time Physical Activity Questionnaire, Godin Leisure-Time Exercise Questionnaire, Baecke Physical Activity, and the Seven Day Exercise Recall are just a few available (Jacobs, Ainsworth, Hartman, & Leon, 1993). Many self-report instruments are in the form of questionnaires (Kriska, 1997). However, there are many different types, including: physical activity diaries/logs, recall questionnaires, quantitative history questionnaires, and global self-report questionnaires (Valanou et al., 2006). Similar to objective measures, there are numerous pros and cons to utilizing subjective measures to assess physical activity. Comparatively, questionnaires are more unlikely to influence the behaviour of participants, specifically, over reporting the amount of physical activity because of the desire to please practitioners/researchers (Kriska, 1997; Sallis & Saelens, 2000). Most subjective measures are an economically feasible and practical method to collect data on physical activity behaviours from a large number of people (Kriska, 1997; Sallis & Saelens, 2000). However, the validity and reliability of subjective measures has been brought into question (Kriska, 1997; Westertrep, 2009), and recalling aspects of physical activity can be a cognitively challenging task (Valanou et al., 2006; Westertrep,

2009). Another aspect to take into consideration when measuring energy expenditure subjectively is how one expresses the amount of energy expended.

Absolute and relative. Both objective and subjective methods can express energy expenditure in absolute terms or relative terms. Absolute methods objectively measure the amount of energy expenditure and do not take individual characteristics into account (WHO, 2010). For instance, absolute methods express energy expenditure as metabolic equivalent of task (METs), kilocalories per minute (kcal/min), or milliliters per kilogram per minute of oxygen (ml/kg/min) being consumed (WHO, 2010). Other absolute measures of effort during an activity include the speed at which the activity is done (e.g., kilometers per hour), or physiological responses to effort being put forth (e.g., heart rate; WHO, 2010). On the other hand, relative methods of measuring energy expenditure take individual characteristics like weight into account. Representing effort as a percentage of an individual's maximum aerobic capacity (VO_2^{max}), or in comparison to their actual or estimated maximum heart rate are examples of relative measures of intensity (WHO, 2010).

Duration. Duration of the physical activity behaviour refers to how long one specific bout of physical activity lasts (Lagerros & Lagiou, 2007). Duration is generally represented by number of minutes, and can be calculated on a daily or weekly basis (Lagerros & Lagiou, 2007). Duration is an important aspect of physical activity behaviour as health benefits can be gained through short but frequent bouts of physical activity (O'Donovan et al., 2010). According to the current physical activity guidelines, the recommended amount of physical activity can be achieved in bouts of 10 minutes in length (CSEP, 2011; WHO, 2010).

Volume. The total volume of physical activity or energy expenditure is a function of the frequency, duration, and intensity; in essence, volume represents the quantity of physical activity (Garber et al., 2011). Volume can be expressed in kilocalories per week (kcal/week), MET minutes per week (MET/min/week), or MET hours per week (MET/hours/week; Garber et al.). The physical activity recommendations (CSEP, 2011) call for 150 minutes of MVPA each week and this equates to approximately 1000 expended kilocalories each week (Garber et al., 2011). Figure 1.0 illustrates how volume (total energy expenditure) can be manipulated by changes in frequency, duration, and intensity, and how total volume can be calculated (Kriska, 1997).

To understand how participation in dog agility impacts participants' levels of physical activity, frequency, duration, and intensity need to be considered. In light of the inherent exercise involved in dog agility, it represents a possible activity that can be promoted to individuals of all ages. However, exploring why individuals choose to participate in this avenue of physical activity is something that the literature has yet to address.

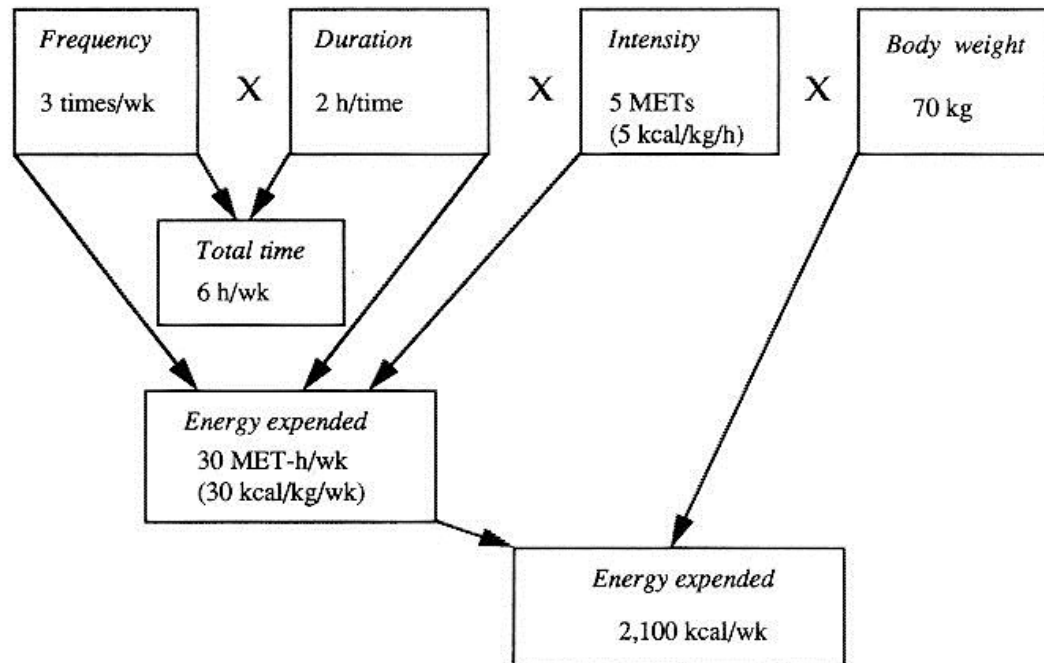


Figure 1.0. Calculation of volume (from Kriska, 1997)

Motivation and the Self Determination Theory

The Self-Determination Theory (SDT) allows the concept of motivation to be operationalized within physical activity contexts (Ryan & Deci, 2007) and can assist in understanding why individuals choose to participate in activities such as agility. Essentially, motivation represents an individuals' intention, direction, regulation, and persistence toward an action or behaviour (Deci & Ryan, 2008). The SDT is considered the only theory of motivation that addresses spontaneous activity, and how to enhance intrinsic motivation (Ryan & Deci, 2007). The SDT provides a valuable tool to explore why individuals are motivated to act and also provides information on the quality of motivation. A central assumption the SDT adopts is "that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborated and unified sense of self" (Deci & Ryan, 2002, p. 5). This expanded and unified sense of self is closely related to intrinsic motivation (described below), which is considered the most

powerful form of motivation on the motivation continuum within the SDT.

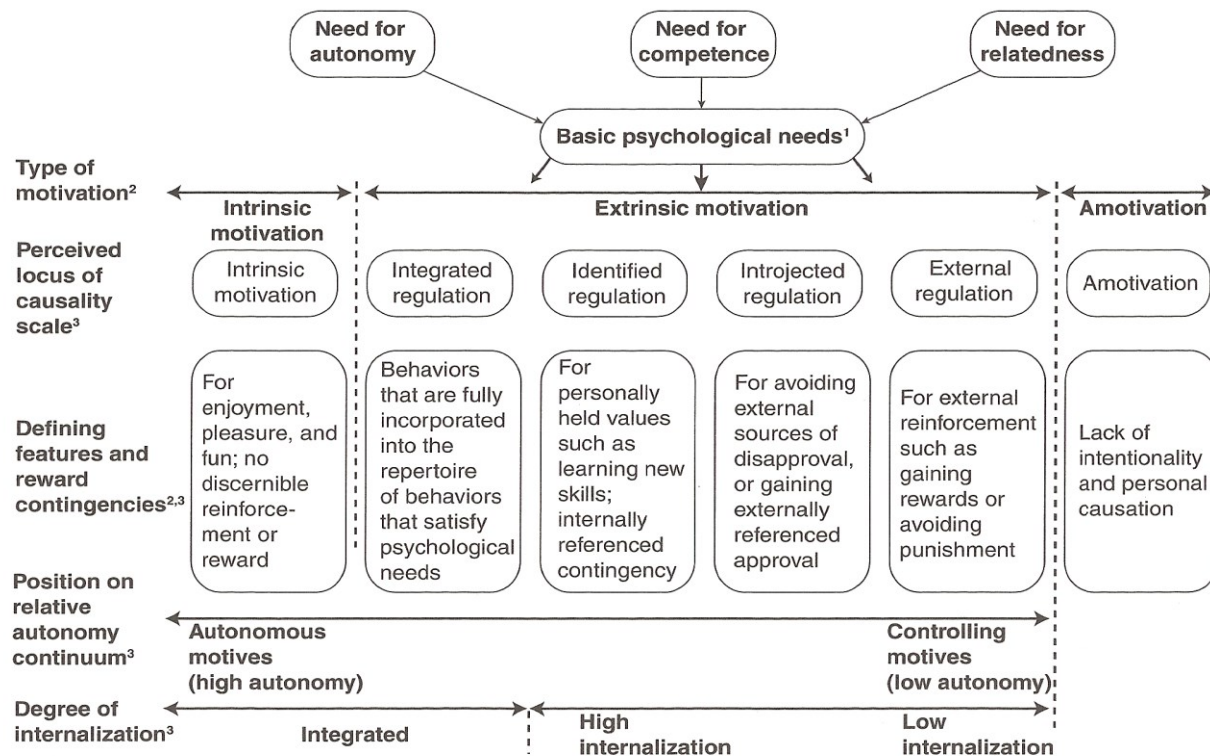


Figure 2.0. Overview of the Self-Determination Theory (from Hagger & Chatzisarantis, 2007)

The motivation continuum describes three fundamental types of motivation (i.e., intrinsic motivation, extrinsic motivation, and amotivation), each illustrating a different degree to which self-determination, or autonomy is experienced (Ryan & Deci, 2000). Motivation for a particular action or behaviour will occur somewhere on the continuum, relative to the degree of autonomy that an individual is experiencing. In Figure 2.0, moving from left to right, intrinsic motivation is the highest form of motivation on the continuum and is followed by extrinsic motivation and then amotivation.

Intrinsic motivation. Intrinsic motivation is a type of motivation experienced when an activity is participated in for the pure joy and challenge inherent within that activity and for no other reason (Deci & Ryan, 2000). Intrinsic motivation, congruent with self-

determined or more autonomous behaviour, is contingent on a high-perceived locus of causality (the degree to which a behaviour is initiated from within), high autonomy (the amount of perceived choice inherent within activity participation), and a high degree of internalization (the degree to which values inherent in participation are experienced within oneself). See Figure 2.0 (Ryan & Deci, 2007).

Extrinsic motivation. Further down the motivation continuum lies extrinsic motivation, which is experienced when motivation is provided through an external source, and not derived from within (Deci & Ryan, 2008). Extrinsic motivation corresponds with reductions in perceived locus of causality and autonomy (Ryan & Deci, 2000). It is also classified further into integrated regulation, identified regulation, introjected regulation, and external regulation; each regulation is distinct from one another and represents a different source of motivation (Ryan & Deci, 2000). Integrated regulation is located to the immediate right of intrinsic motivation on the continuum. It occurs when the activity or behaviour is instigated because of an external factor but is still volitional in nature; however, through internalization, the values inherent within the activity have become personally meaningful and fully assimilated into the individual's being (Deci & Ryan, 2000). Identified regulation occurs when an individual who is participating in an activity begins to identify with it (the values inherent in the activity have become personally meaningful). Moreover, the importance and value of the activity begins to propel or enrich his/her life (Ryan & Deci, 2007). Introjected regulation is experienced when individuals perceive internal (e.g., self-administered rewards, or punishments), or external pressures (e.g., rewards or avoiding punishment from a coach) and participate in an activity in an effort to alleviate these stressors (Ryan &

Deci, 2007). Lastly, external regulation is characterized by low autonomy and low internalization. The source of motivation behind external regulation is external to the individual and motivation is contingent on achieving some type of external reward (e.g., money, trophy, praise; Deci & Ryan, 2007).

Amotivation. Amotivation exists in complete contrast to intrinsic motivation and represents a complete lack of motivation and intent to act (Deci & Ryan, 2007). When individuals do not perceive any value in an action, behaviour, or the outcome associated with it, they are most likely in an amotivated state (Deci & Ryan, 2008). Moreover, individuals may value the outcome of an action/behaviour but they may not believe that the outcome is reliably associated with the action/behaviour, or may not feel competent in carrying out the action/behaviour (Deci & Ryan, 2008).

Governing constructs. All forms of motivation that appear on the SDT continuum can be separated into two major subgroups of self-determined motivation (e.g., intrinsic motivation) and non self-determined motivation (e.g., external and introjected regulation). The motivation form one is experiencing is dependent on two theoretical governing constructs that are similar in nature and allow researchers to utilize the SDT effectively: the degree of internalization and the level of autonomy one is experiencing (Deci & Ryan, 2008). Intrinsic motivation, integrated regulation, and identified regulation are motivational forms that appear higher on the self-determination continuum, are associated with a higher degree of autonomy, and categorized as forms of more self-determined motivation (Deci & Ryan 2000). Although intrinsic motivation, integrated regulation, and identified regulation can be categorized together, it is important to note that intrinsic motivation is the only true self-determined form of motivation (Deci &

Ryan). Other forms of extrinsic motivation (e.g., introjected regulation, external regulation, and amotivation) occur when individuals experience less autonomy over their actions, and the behaviour is non self-determined, or controlled in nature. Different levels of autonomy help to distinguish between the various forms of motivation (Standage & Ryan, 2012). Internalization is the process through which individuals begin to understand, find meaning in, and inherently value an activity and begin to accept and fully incorporate those values into their person (Deci & Ryan). Through internalization, individuals can effectively move 'up' the motivation continuum and experience greater forms of self-determined motivation. Individuals who are experiencing intrinsic motivation and integrated regulation have fully 'integrated' the values into their own belief system (Deci & Ryan).

Importance of the SDT

The SDT has been applied in many environments but it has been repeatedly applied to sport, physical activity, and exercise settings (Hagger & Chatzisarantis, 2007; Kilpatrick, Herbert, & Jacobson, 2002; Wilson, Mack, & Grattan, 2008). Within physical activity and exercise settings, the SDT is particularly relevant given the type of motivation experienced during participation may determine future adherence behaviours and overall enjoyment (Frederick-Recascino, 2000). Specifically, intrinsic motivation has been associated with increased adherence to physical activity programs (Deci & Ryan, 2002); as effort invested is increased (Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson, 2007), overall satisfaction and positive emotions also increase (Frederick-Recascino, 2000). Furthermore, Duncan, Hall, Wilson, and O (2010) assessed the relationship between motivation and duration, frequency, and intensity of exercise. It

was found that intrinsic motivation, along with other more autonomous forms of extrinsic motivation, were strongly correlated with increased duration, frequency, and intensity of exercise. Specifically, both integrated and identified regulation were significant predictors of exercise frequency, while integrated regulation alone was a significant predictor of exercise duration. Lastly, it was noted that introjected regulation was a positive predictor of exercise intensity for females only, which illustrates that exercise may be driven by a sense of obligation, more so than other factors. These findings are also consistent with Wilson, Rodgers, Fraser, and Murray (2004) who noted that beneficial motivational consequences (e.g., behavioural intentions, exercise behaviour, effort, and importance associated with exercise) were predicted by intrinsic motivation and identified regulation. Wilson et al. (2004) also noted that introjected regulation was a predictor of motivational consequences in women. However, regardless of sex, motivational consequences were predicted most strongly by identified regulation.

Standage, Sebire, and Loney (2008) also utilized motivation from a SDT perspective to try and predict levels of moderate-intensity exercise behaviour amongst competitive university swimmers. They concluded that high forms of autonomous motivation (integrated regulation and intrinsic motivation) positively predicted moderate-intensity exercise. These exercise sessions occurred in bouts of 10 minutes, 20 minutes, or longer and contributed to participants meeting the American Heart Association (2013) physical activity guidelines of 30 minutes of moderate-intensity activity five days/week minimum (Standage, Sebire, & Loney, 2008). Edmunds, Ntoumanis, and Duda (2006) also found that both identified and introjected regulations were significant positive predictors of exercise behaviours in different exercise class

contexts with participants aged 16 to 64. It was posited that higher forms of self-determined extrinsic motivation, such as identified regulation, may be a viable form of motivation in worthwhile but inherently uninteresting activities like exercise machines (Edmunds, Ntoumanis, & Duda, 2006). Introjected regulation and external regulation, in particular, have been associated with higher activity dropout rates and less satisfaction (Frederick-Recascino, 2000).

Research examining the relationship between motivation and physical activity has shed light on the consequences (e.g., frequency, duration, intensity) of various forms of motivation (Deci & Ryan, 2002; Duncan et al., 2010; Edmunds et al., 2007; Standage et al., 2008; Wilson et al., 2004). This body of research has largely concentrated on exercise contexts and has utilized youth and younger adults as the sample population. To our knowledge, research has yet to explore how motivation impacts physical activity behaviours within a dog sport context, especially utilizing adults of all ages. Part of Frederick and Ryan's (1995) review on self-determination in sport examined the motivational differences between exercise and sport. Generally, sport participation was accompanied by intrinsic motivation, whereas individuals participating in physical activities such as exercise experienced less intrinsic motivation. It was postulated that these differences in motivation stemmed from the external reasons (e.g., losing weight, attractiveness) that draw individuals to exercise programs. Frederick and Ryan (1993) also conducted a study on the motivational differences between sport and exercise participants. Sport participation was largely motivated by interest/enjoyment and competence, whereas exercise was regulated by body-related motivation. The results further indicated that exercise was motivated by external factors while internal factors

regulated participation in sports. Research indicates that individuals experience higher forms of motivation during participation in sports and that there are many positive benefits associated with more self-determined forms of motivation (Deci & Ryan, 2002; Duncan et al., 2010; Edmunds et al., 2007; Standage et al., 2008; Wilson et al., 2004). However, to fully explore motivation and its consequences, an understanding of what influences motivation needs be obtained.

Basic Psychological Needs

The concept of basic psychological needs is encompassed by the cognitive evaluation theory, a mini-theory within the SDT (Frederick & Ryan, 1995; see Figure 2.0). The basic psychological needs are a fundamental component of the SDT as it allows researchers to explore what factors influence motivation (Frederick & Ryan, 1995). Specifically, the SDT stipulates that there are three innate psychological needs, autonomy, competence, and relatedness, that need to be fulfilled in order to experience well-being and self-determined motivation (Ryan & Deci, 2007). The degree to which these needs are satisfied influences the type of motivation experienced (Ryan & Deci, 2007). The need for autonomy expresses our need to be the source of our own actions and behaviour. Autonomy represents the amount of perceived choice people have over their actions and behaviours (Ryan & Deci, 2002). The need for competence postulates that individuals have a desire to experience a sense mastery in producing specific outcomes while effectively interacting with ones environment (Edmunds et al., 2006). At its core, competence represents the degree of confidence and effectiveness an individual experiences during his/her participation in an activity (Ryan & Deci, 2002). Relatedness represents an individual's need for meaningful social interactions and a

meaningful connection with one's social environment (Ryan & Deci, 2002). Individuals have an innate need to possess a sense of belonging and acceptance by others and relatedness illustrates the degree to which this occurs (Ryan & Deci, 2002).

The satisfaction of the three needs in physical activity environments support the internalization process; in other words, the motivational type can be altered when the needs are experienced to a greater degree (Ryan & Deci, 2007). For instance, through internalization an individual can become more autonomously motivated for a seemingly uninteresting task that was initiated for external reasons to begin with (Standage & Ryan, 2012).

The basic psychological needs provide a descriptor of how the external environment can affect the quality of motivation. When a physical activity environment is supporting autonomy, competence, and relatedness, a higher quality (i.e., more autonomous) motivational form will be experienced and the internalization process will be encouraged (Deci & Ryan, 2000). However, the environment in which physical activity is occurring may also undermine the basic psychological needs and thwart higher forms of motivation and overall well-being (Ryan & Deci 2002; Standage & Ryan, 2012). The term utilized to describe the degree to which the basic psychological needs are being met is need satisfaction (Deci & Ryan, 2000). The level of need satisfaction is important to understand because need constructs can be directly applied to potential intervention studies; through examining the three basic psychological needs, we can influence the type of motivation experienced (Ryan & Deci, 2000).

Importance of the Basic Psychological Needs. Research has explored the relationship between the three basic psychological needs and more autonomous or self-

determined forms of motivation in exercise settings and found that they are positively related (Wilson, Rodgers, Blanchard, & Gessell, 2003; Wilson, Rodgers, & Fraser, 2002). Furthermore, Kirkland, Karlin, Babkes Stellino, and Pulos (2011) illustrated the direct relationship between the three basic psychological needs and exercise behaviours and found that need satisfaction was positively associated with adherence to an exercise program. Adie, Duda, and Ntoumanis' (2008) findings suggested the three needs were essential elements required for well-being, and both competence and autonomy were predictors of subjective vitality, which is defined as "high positive energy emanating from the self" (p. 196). Inversely, Adie et al. (2008) also found that athletes experiencing minimal amounts of autonomy indicated higher levels of emotional and physical exhaustion.

A more current review on the SDT constructs and physical activity behaviours (Teixeira, Carraca, Markland, Silva, & Ryan, 2012) examined the potential mediating role of the basic psychological needs or the indirect relationship between needs and physical activity behaviours. Teixeira et al. (2012) commented that a number of studies have assessed a motivational sequence of physical activity behaviours from a SDT perspective. According to this review, collective empirical evidence supports the following motivational sequence for exercise: need supportive environment → need satisfaction → autonomous/self-determined motivation → exercise behaviours. The authors concluded that by utilizing the motivational sequence and the indirect relationship between the basic psychological needs and physical activity behaviours, practitioners in physical activity settings can positively influence an individual's health and well-being (Teixeira et al., 2012). Practitioners in physical activity settings can

support individuals' needs for autonomy, competence, and relatedness within their programs in order to enhance need satisfaction, and therefore also positively influence motivation and exercise behaviours (Teixeira et al., 2012).

In line with this conclusion, McEwan and Sweet (2012) conducted a study using a sample of 332 university students. The aim was to examine whether individuals who engage in more health enhancing physical activity (HEPA) had different levels of perceived need satisfaction and motivational regulations compared to less active individuals. Results illustrated that participants who engaged in HEPA experienced higher levels of need satisfaction and greater levels of self-determined motivation, and lower levels of non self-determined motivation. It appears that no study to date has examined whether individuals who engage in more physical activity within a sport context experience have enhanced perception of need satisfaction, increased motivation, and physical activity consequences (e.g., increased duration, frequency).

Overall, it is evident that an individual's perception of the basic psychological needs within a physical activity context influences the type of motivation that is experienced (Teixeira et al., 2012; Wilson et al., 2003; Wilson et al., 2002). In addition, integrating the basic psychological needs within studies allows researchers to explore why someone is experiencing different forms of motivation, and whether it is of a non self-determined or self-determined nature. However, limited information is available on the environmental and social factors within sport settings that influence perceptions of the basic psychological needs (Wilson, Mack, & Grattan, 2008), and in turn, motivation and physical activity behaviours. To fill this gap, Frederick-Recascino and Ryan (1995) indicated that certain interpersonal elements influence self-determination and

perception of the needs in sport settings. Among the influences, they include various significant figures such as: coaches, parents, mentors, and anyone else that is significant to them, which may include peers. Vallerand (1997) expanded Frederick-Recascino and Ryan's work and developed a hierarchical model of motivation.

Integrated Approach to Motivation

Vallerand (1997), and Vallerand and Losier (1999) developed an integrative approach to motivation that incorporated both the SDT and Vallerand's hierarchical model of intrinsic and extrinsic motivation. Vallerand and Losier's integrated approach proposed a motivational sequence similar to Teixeira et al.'s (2012) motivational sequence. Vallerand and Losier's motivational sequence was developed for use within a sport setting while Teixeira et al.'s sequence focuses on general exercise/physical activity settings. Vallerand and Losier's motivational sequence (Figure 3.0) is able to house constructs from the SDT and Achievement Goal Theory (Nicholls, 1989), which is appropriate because many studies combine both the theories (e.g., Biddle, Soos, & Chatzisarantis, 1999; Standage, Duda, & Ntoumanis, 2003). Achievement Goal Theory describes how the adoption of different goals (e.g., task and ego oriented) within certain contexts can impact motivation (Rawsthorne & Elliot, 1999).

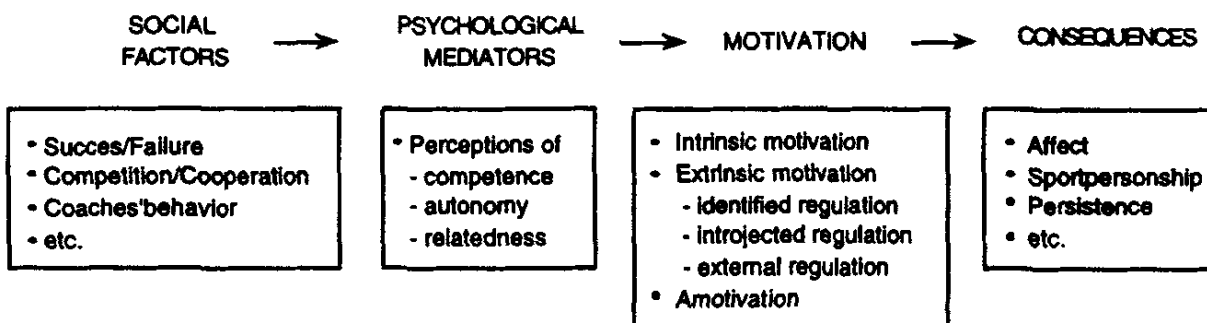


Figure 3.0. Vallerand and Losier (1999) motivational sequence

Vallerand and Losier's (1999) integrated motivational sequence helps explore behaviour utilizing various social factors that are present within sport environments. Vallerand and Losier's work is the only motivational sequence developed specifically for sport contexts and it provides a framework that allow researchers to analyze the effects of different social factors on the basic psychological needs, motivation, and consequences. According to the sequence, various social factors in a sport environment can influence perceptions of competence, autonomy, and relatedness, such as: success or failure, degree of competition, and other significant figures (e.g., coach, mentors, parents, peers). Perceptions of need satisfaction mediate the effects of social factors on motivation, which occurs in a multitude of forms. In turn, motivation induces consequences in sport and physical activity settings (Vallerand & Losier, 1999).

Vallerand and Losier's (1999) integrated motivational sequence has been explored in a limited number of studies within both sport and exercise contexts (Vallerand, 2007). Sarrazin, Vallerand, Guillet, Pelletier, and Cury (2002) demonstrated support for the model in their study on sport dropout using female handballers ($n=335$). Sarrazin et al. (2002) utilized constructs adopted from Nicholls (1989) Achievement Goal Theory. They concluded that a task-oriented social climate (e.g., with emphasis on learning, effort, and cooperation) influenced athletes' perception of need satisfaction and, in turn, motivation. Athletes who perceived a higher degree of need satisfaction also experienced more self-determined forms of motivation. In terms of consequences, Sarrazin et al. found that athletes who experienced self-determined forms of motivation had higher intentions to persist in handball while those non self-determined athletes dropped out more frequently. Kowal and Fortier (2000) also tested the motivational

sequence utilizing perceptions of success/failure and motivational climate as social factors, and flow as a motivational consequence. Results illustrated that perceptions of success were positively related to competence, and task-oriented climates (i.e., defined by self-improvement and learning) were positively linked with relatedness while ego-oriented climates (i.e., climates that focus on social comparisons and winning) were negatively linked with autonomy. Overall support for Vallerand and Losier's motivational sequence was also found as positive perceptions of the three needs were positively associated with self-determined forms of motivation, and this in turn facilitated flow. Flow is a positive psychological state and it was the construct that Kowal and Fortier measured as their consequence of motivation. Ntoumanis (2001) tested Vallerand and Losier's motivational sequence in a physical education setting. Ntoumanis employed measures of cooperative learning, emphasis on improvement, and perceived choice as social influences, and measured effort, intention, and boredom as motivational consequences. Ntoumanis employed Structural Equation Modelling and concluded that the results were also in favour of the motivational sequence (i.e., social factors → perceptions of basic needs → motivation → consequences).

The motivational sequence of “social factors → mediators → motivation → consequences” has been demonstrated as a sound concept within sport and exercise settings (Kowal & Fortier, 2000; Ntoumanis, 2001; Sarrazin, Vallerand, Guillet, Pelletier, & Cury 2002). Thus, demonstrating the use of the motivational sequence within an agility setting would make sense as it would allow for an in-depth exploration into why individuals achieve varying amounts of physical activity within this particular context. Research utilizing the motivational sequence has also largely been conducted with

quantitative measures (Kowal & Fortier, 2000; Ntoumanis, 2001; Sarrazin et al., 2002).

The same research has also identified a number of social elements (e.g., motivational climate, perceptions of success/failure, cooperative learning, emphasis on improvement, and perceived choice) that influence the motivational sequence.

However, the integrated approach has yet to be applied to a dog sport setting and there may be a number of social factors that impact the motivational sequence. Therefore, in order to explore a full range of social factors that influence the motivational sequence, a mixed methods approach is required. Utilizing constructs from the Achievement Goal Theory within an integrated approach may also be beneficial because individuals may adopt different goals within agility that can impact their subjective experience.

Employing qualitative measures will allow for an exploration of why certain quantitative results occur (e.g., degree of need satisfaction, forms of motivation, and physical activity behaviours); Ivankova, Creswell, & Stick, 2006). Moreover, exploring social factors along with the basic psychological needs may illustrate why individuals engage in agility to varying degrees.

Social and Environmental Factors in Agility

The structure of the event and its inherent characteristics (e.g., timing, titles, competition with self or with others) makes competition a fundamental characteristic of agility. It has been demonstrated that competition can influence performance in multiple contexts, including sport (Cooke, Kavussanu, McIntyre, & Ring, 2011). Similarly, Tauer and Harachiewicz (2004) tested how pure competition, pure cooperation, and intergroup competition (combined competition and cooperation) impacted intrinsic motivation and performance within a sport context. The researchers noted that intergroup competition

was the most effective at improving both enjoyment and performance. Tauer and Harachiewicz further posited that qualities of enjoyment and improved performance are indicators of intrinsic motivation. Agility may be considered a form of intergroup competition because it has elements of both cooperation and competition. Cooperation is a central aspect of agility as a participant is always part of a team that consists of a human and a dog; every movement must be coordinated and practiced to obtain optimal performances. Analogously, competition is another central theme in agility as there are multiple individuals attempting to achieve the fastest time possible without incurring faults.

Competition and goals. The structure of agility allows individuals to be competitive in two different ways. Essentially, participants can choose to be competitive with themselves and attempt to strive for more intrinsic goals that focus on self-improvement (i.e., effort, personal bests, improving on a task; Deci & Ryan, 2008). However, they may also choose to adopt goals that place emphasis on external factors, such as comparisons with others (e.g., winning, beating others; Deci & Ryan, 2008). Intrinsic and extrinsic goals are also similar to Nicholls' (1984) work on achievement behaviour and goal pursuits. Nicholls posited that there are two different types of goals that individuals can pursue; one being ego-involved which mimics extrinsic goals and the other being task-involved which is similar to intrinsic goals. It was proposed that the type of goal adopted defines how individuals perceive success. Deci and Ryan (2000) recognized the link between the two types of goal pursuits and their relation to intrinsic motivation. Deci and Ryan (2000) advanced that task-involved goals facilitate intrinsic motivation while ego-involved goals can undermine intrinsic motivation. Rawsthorne and

Elliot (1999) conducted a meta-analytic review on the relationship between goal orientation and intrinsic motivation, which confirmed the undermining effect of ego-oriented goals on intrinsic motivation.

Goals are very individualistic in nature and participation in agility allows individuals to adopt goals that define success in their eyes. Similar to Reimer and Thomas's (2005) study on dog obedience competitors, participants in agility can adopt goals where they attempt to achieve personal bests; for instance, striving for a personal best in terms of time or score, or achieving a clean run (i.e., no faults). On the other hand, participants can adopt goals that are more ego-involving, in that they attempt to have the best time or score in comparison to other competitor (i.e., earning titles, advancing levels).

Ego and task-involving goals can also be adopted in dog sports. Although no studies have focused on goal orientation in agility, Reimer and Thomas (2005) explored goal orientations amongst 119 competitive dog obedience participants. Overall, they found that competitive dog obedience participants had higher levels of task orientation and primarily adopted task-involving goals. Reimer and Thomas proposed a possible reason for the predominantly task oriented population may have been due to the focus of the sport. It is believed that at first the focus is on the dog and if the dog performs well the focus shifts to the person; therefore the social comparisons between owners takes a back seat to the dogs performance, at least initially. It is clear that goal orientation can impact motivation; however, it is unclear as to how these goals will impact overall participation in a dog agility sport setting.

Motivation and Agility Participation

Applying the integrated approach of motivation to examine people who participate in agility will provide inclinations into the type of motivation being experienced during this activity and the reasons behind participation. Investigations employing the SDT have illustrated that those who experience self-determined forms of motivation are more likely to invest themselves to a greater extent within exercise settings (Deci & Ryan, 2002; Duncan et al., 2010; Edmunds et al., 2007; Standage et al., 2008; Wilson et al., 2004). In addition, individuals who experience greater need satisfaction in a physical activity environment will experience more self-determined forms of motivation (Ryan & Deci, 2007). Therefore, participants who engage in higher amounts of an activity are more likely to experience self-determination. Gaining an understanding of the forms of motivation experienced will allow for further exploration into the interplay between physical activity behaviours and motivation within a dog sport context.

Considering the sedentariness of our population (Flegal, Carrol, Ogden, & Curtin, 2010), it is imperative that all potential physical activity interventions maximize their potential. Developing an understanding of motivation and physical activity behaviours within a dog sport setting may increase the probability that individuals will adhere to any developed dog sport program. Exploring all aspects of the motivational sequence amongst adult agility participants will provide information on the viability of agility as a lifetime physical activity that supports health and well-being. Applying qualitative methods using the SDT and Vallerand and Losier's (1999) motivational sequence as a theoretical guide will enable further exploration into what motivational factors

differentiate individuals who achieve high amounts of physical activity through agility and those who do not. Theoretically informed physical activity interventions have utilized the basic psychological needs as their foundation and have demonstrated effectiveness (Standage & Ryan, 2012). Developing an understanding of the agility environment and the inherent social factors that impact the motivational sequence amongst those who achieve high amounts of activity could potentially enhance the effectiveness of physical activity interventions. In order to facilitate more participation in any sport or physical activity endeavor an understanding of why some individuals engage in high amounts of the sport would be a logical first step. Therefore, investigating social/environmental influences that high engagers (i.e., meet the physical activity guidelines) perceive in agility may pave the way for development of effective physical activity interventions using dog sport.

Purpose

The primary purpose of this cross sectional study was to explore qualitatively the social factors within agility that influence the motivational sequence amongst competitive adult agility participants who achieve higher (>1000kcal/week) amounts physical activity through agility training (in-class and out-of-class training sessions) and competitions (i.e., Component Two). The primary purpose also contained four quantitative secondary objectives: (1) to gain an understanding of how much physical activity is achieved through agility participation in general amongst participants; (2) to explore perceptions of need satisfaction and the forms of motivation that agility participants experience; (3) to investigate how motivation influences physical activity

behaviours and; (4) to investigate the possibility of predicting physical activity behaviours within a dog sport setting (i.e., Component One)

Hypotheses

The primary purpose of this study is exploratory in nature and therefore involves no hypotheses. Because the secondary objectives are quantitative, specific hypotheses were developed accordingly as follows: (1) in terms of physical activity achievement, it was hypothesized that the majority of individuals would meet the physical activity guidelines (150 minutes MVPA/week, or 1000kcal/week) through their agility participation; (2) on average, participants three basic psychological needs would be met through their participation and would experience more self-determined forms of motivation because according to the SDT (Deci & Ryan, 2002), individuals who express higher degrees of persistence in an activity are likely to be experiencing self-determined forms of motivation; (3) individuals who experience more self-determined forms of motivation would achieve higher physical activity values than participants who experience non self-determined forms; and (4) self-determined forms of motivation would be able to positively predict physical activity behaviours including frequency, duration, and intensity.

Method

Participants and Sampling Techniques

Ethics approval was gained from Lakehead University Research Ethics Board, and a sample of 233, men and women, aged 18 and over were recruited. In order to be eligible for inclusion, potential participants were required to own at least one dog and currently participate in agility training and/or competition with their dog(s). Potential participants must have had previously attended a minimum of one structured agility competition that was organized by a recognized dog sport club and sanctioned by a larger dog sport governing body (i.e., AAC, CKC, AKC, NADAC, USDAA). Participants must have competed in a sanctioned agility competition within the past 10 years, as recall of physical activity behaviours within this time period has been identified as reliable (Blair et al., 1991).

Both purposive and snowball sampling techniques (Trochim, 2005) were employed to recruit participants. Purposive sampling was utilized, as the population of interest is adults who participate competitively in agility with their dog(s), and all potential participants must have fit this criteria (Trochim, 2005). Once participants were recruited, snowball sampling was utilized to allow current participants to identify others who meet eligibility requirements for inclusion (Trochim, 2005). As the number of individuals who compete in agility in Thunder Bay and the surrounding region is relatively small, both of these sampling techniques were essential to reach the target population and an adequate number of participants.

Recruitment of potential participants occurred in a variety of locations in Thunder Bay and the surrounding region, including areas in Minnesota. Agility competitions that

occurred in these areas were attended by the researcher to obtain participants. Participants were also recruited from local dog club events and training classes (e.g., Canine Development Club, K-9 Studio).

Prior to attending sanctioned agility competitions, local dog club events, or training sessions, the organizers of these functions were contacted to gain permission for the researcher to attend. Organizers were contacted via email and supplied with a letter that briefly described the study and asked for their assistance (see Appendix A), as well as the participant information letter (see Appendix B) to provide an outline of the research. Permission was requested for the researcher to attend their agility event or class to collect data. Potential participants at the events were informed that they can refer other individuals whom they believed meet the inclusion criteria. The student researcher provided his contact information to all potential participants so they could inform other eligible participants to call if they were interested.

Design of Study

The study utilized a mixed methods design and involved two concurrent components. As such, the specific design adopted was a concurrent triangulation design (Creswell & Plano Clark, 2006). Concurrent triangulation stipulates that both quantitative and qualitative data will be collected separately and then interpreted together. According to Creswell and Plano Clark (2006) the concurrent triangulation design is best employed when exploring a single phenomenon using complementary methods, in an attempt to expand quantitative results with qualitative findings.

Collecting both qualitative and quantitative data was required to fully understand the questions being explored in this relatively new area of research. Quantitative

information provided information on motivation, need satisfaction, physical activity, and demographics. Both quantitative and qualitative information was collected to explore why individuals achieve various amounts of physical activity in relation to the form of motivation they experience. Qualitative information also provided insight into the reasons behind participants' initial decision to begin participating and why they persist in the activity.

Procedure

Component one: Quantitative. Participants were contacted either through a local training facility, or at an agility trial as described previously. Prior to inclusion in the study, potential participants were provided with information on both components of the study through a cover letter. Once informed consent was gained for component one (see Appendix C), an instrumentation package containing a demographic questionnaire (Appendix D), a physical activity inventory (Appendix E), Sport Motivation Scale (SMS-II; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013; Appendix F), Basic Needs Satisfaction in Sport Scale (BNSSS; Ng, Lonsdale, & Hodge, 2011; Appendix G), and a contact information sheet (Appendix H), was handed to participants. An identification number unique to each participant linked all facets of the package. The contact information sheet asked participants if they wished to be considered as participants in the second component of the study, and if so, to provide their primary contact information. Participants were requested to complete the instrumentation package on location (e.g., agility competition, training facility). If the location warranted, a portable table and chair were provided to facilitate completion of the questionnaires. If a

participant does not have time at the moment of contact to complete the instrumentation package, they were able to complete the questionnaire packet online.

To capture information from individuals who were not able to attend an organized agility function, component one of the study was also available on online. Individuals were able to read the participant information letter and provide informed consent on online and then fill out the full questionnaire packet.

Component two: Qualitative. Component two of the study was conducted in conjunction with component one. Component two focused on collecting qualitative data via one-on-one semi-structured interviews that provided more in-depth information. Data provided information on constructs that influence the motivational sequence, including: motives for participation, need satisfaction, social factors (e.g., success/failure, competition/cooperation), and significant others (e.g., mentors, peers).

The sampling technique utilized in component two was quota sampling (Trochim, 2005) and it was used to recruit 7 participants. Individuals were placed in one of two groups depending on the amount of estimated energy expenditure they achieve through their participation in agility, which was determined through component one. The two groups represented those who engaged in higher amounts of agility specific physical activity (>1000kcal/week) and lower amounts of agility specific physical activity (<1000kcal/week). Group assignment occurred in a retrospective manner (e.g., after both components have occurred), or immediately preceding the interview (e.g., after component one of the study had taken place). Only those in the group that achieved higher amounts of agility (>1000kcal/week) related physical activity were eligible for component two. Individuals who expressed interest in participating in component two of

the study and met the criteria (i.e., achieve over >1000kcal/week through agility) were asked if they would like to participate. Potential participants were contacted verbally, by phone, or email and provided with a written or verbal description of the study. Interviews were granted on a first-come, first served basis. Participants who agreed were asked to designate a convenient time/place that they would have like to meet in order to conduct component two of the study. If the participant did not suggest an alternative location, the researcher suggested the interview room located in the School of Kinesiology at Lakehead University. To accommodate individuals from the Minneapolis area, while attending agility events and collecting data for component one, interviews for component two were arranged over the same time period (e.g., a weekend), or were done via teleconference at a later date. While collecting data outside of Thunder Bay for component two, interviews were arranged at the participant's convenience. Individuals who completed component one online and wished to participate in component two were asked to contact the researcher. Two individuals who completed the component one online were recruited for component two, and five interviews were completed onsite at agility competitions.

Upon meeting for the interview, the researcher verbally reviewed the purpose of the study and the cover letter for component two (Appendix I) and answered any questions. Participants were asked to provide written consent to participate for component two (Appendix J). Once consent was obtained, the meeting proceeded with a one-on-one semi-structured interview. The interview followed an interview question guide (Appendix K) that was developed to provide detailed information on a number of elements that are discussed further in the instrumentation section. The interview

process took approximately 45 minutes. Interviews were documented using a digital audio recorder, which allowed for transcription of the interview at a later date. At the completion of the interview, participants were thanked and asked if they can be contacted if the researcher had any further questions.

Instrumentation

Demographic information. The demographic information questionnaire was developed by the researcher to provide demographic details such as: gender, age, height, weight, education, location of housing (urban/rural), self rated health, and mobility of the participants. Additionally, it collected information on how many dogs' participants own and their size, age, energy levels, health, and mobility. The demographic questionnaire is included in Appendix (D).

Physical activity inventory. The physical activity inventory that was used was developed according to recommendations from Jacobs, Ainsworth, Hartman, and Leon (1993), and Trochim (2005). Questions were designed to capture activity relevant to agility participation. The physical activity inventory is included in Appendix (E) and it is a self-report assessment that was created for the purposes of this study. The physical activity inventory focused on information related to the average frequency, duration, and intensity of agility training sessions. Measuring the intensity of agility participation and overall physical activity followed protocols outlined by Frederick and Ryan (1993), and Conway, Irwin, and Ainsworth (2002). Intensity was differentiated into three categories of mild, moderate, and vigorous using a combination of examples that focused on pace (i.e., stroll, brisk walk, jog, sprint), and physiological markers (i.e., breathing rate). Questions assessed how often a participant engaged in agility in an average week and

how long a typical training session lasted. Participants also indicated how long (in minutes) they spent at each of the identified intensities. Other questions asked how many agility competitions and training classes were attended each year on average. Agility participation behaviour will be collected for both winter (indoor) and summer (outdoor) agility seasons because there might be different definitions 'agility season' due to differences in preference (i.e., indoor and outdoor competition), climate, and region. Participation information was collected for agility training that takes place in class settings and outside of class settings. Additional questions focused on other types of physical activities that participants engaged in external to agility participation in both the winter and summer seasons.

Revised Sport Motivation Scale. The Revised Sport Motivation Scale (SMS-II) developed by Pelletier, Rocchi, Vallerand, Deci, and Ryan (2013) was used to measure the type of motivation participants experienced relating to their participation in agility. The SMS was created to provide a context specific measure of motivation in sport based on the tenets of the SDT. The SMS-II was developed as a revision to the original SMS developed by Pelletier, Fortier, Vallerand, Tuson, Briere, and Blais (1995) and SMS-6 developed by Mallet, Kawabata, Newcombe, Otero-Forero, and Jackson (2007). The SMS-II is an 18-item questionnaire that includes six subscales measuring: amotivation (e.g., 'I used to have good reasons for doing sports, but now I am asking myself if I should continue'), external regulation (e.g., 'Because I think others would disapprove of me if I did not'), introjected regulation (e.g., 'Because I feel better about myself when I do'), identified regulation (e.g., 'Because I have chosen this sport as a way to develop myself'), integrated regulation (e.g., 'Because participating in sport is an

integral part of my life'), and intrinsic motivation (e.g., 'Because it gives me pleasure to learn more about my sport'). Participants' motivation is measured using a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds exactly). The SMS-II has established acceptable reliability and validity with Cronbach's alpha values ranging from .73 to .86 (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013). The SMS-II was modified by the researcher to fit the context of agility participation. For instance, in places where appropriate, the word 'sport' was replaced with 'agility'. The complete SMS II is included in Appendix F.

Basic Needs Satisfaction in Sport Scale. The BNSSS (Ng, Lonsdale, & Hodge, 2011) was used to measure the degree of need satisfaction that participation in agility provides competitors. The BNSSS was developed by Ng, Lonsdale, and Hodge (2011) based on the SDT framework in order to measure sport specific need satisfaction. The BNSSS is a 20-item questionnaire that measures five subscales. It includes 5 items that measure relatedness (e.g., 'In my sport, I feel close to other people'), 5 competence items (e.g., 'I feel I am good at my sport'), and 10 autonomy items, which are separated into three subscales of choice (e.g., 'In my sport, I have a say in how things are done'), internal perceived locus of causality (IPLOC; e.g., 'In my sport, I really have a sense of wanting to be there'), and volition (e.g., 'I choose to participate in my sport according to my own free will'). Participants need satisfaction is measured using a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds exactly). The BNSSS demonstrates strong factorial validity and reliability, which Cronbach's alphas values ranging from .74 to .87 (Ng, Lonsdale, & Hodge, 2011). The BNSSS is included

in Appendix G. The BNSSS was modified by the researcher to fit the context of agility participation, and the word “agility” was inserted when appropriate.

Component Two Instrumentation

Interview protocol. An interview protocol was developed by the researcher in order to guide the semi-structured one-on-one interviews. The interview guide was informed by previous research that has utilized Vallerand and Losier’s (1999) motivational sequence. As there are many different approaches to interviews, a romantic conception of interviewing was be adopted (Roulston, 2010). According to Roulston, the romantic approach to interviews embraces the role that the researcher plays in the interview process. The researcher is clear regarding the research topic and the interview resembles a conversation. Questions addressed a number of topics, such as why participants opted to participate in agility and why participants persisted in the sport. Additionally, questions will address various social factors that previous research has identified as potential influencing factors on the motivational sequence (Kowal & Fortier, 2000; Ntoumanis, 2001; Sarrazin et al., 2002; Vallerand & Losier, 1999). Social factors that were explored include: (a) perceptions of what success/failure looks like in agility, (b) perceptions of the amount of competition and cooperation involved, (c) how others in the sport (mentors/peers/trainers) influence their behaviour, (d) and perceptions of the basic psychological needs. Theoretical sampling was also utilized throughout component two. In essence, theoretical sampling allows the researcher to follow the information and modify the interview guide in order to capture information that was not initially foreseen (Draucker, Martsolf, Ross, & Rusk, 2007). Theoretical sampling enabled the researcher to explore alternative and pertinent avenues of

information that are emerging from the data (Draucker et al., 2007). The interview protocol is included in Appendix K.

Data Analysis

Data analysis was conducted separately for both quantitative and qualitative components of the study. Upon completion of data analysis, both sets of data were merged for interpretation in the discussion. Merging the data allowed for the interpretation of the data to be done in the context of the motivational sequence.

Quantitative. The quantitative data was analyzed using Statistical Package for Social Sciences (IBM Corp, 2010). Frequencies and descriptives were used to describe the sample demographics (e.g., age, sex, height, weight, education). The amount of physical activity that was achieved through participation in agility was used to create an index of physical activity achievement. Agility related physical activity was expressed as the amount of energy that has been expended (kcal/week) utilizing the following equation: frequency (# sessions/week) x duration (length of sessions) x intensity (MET value) x weight (kg; Kriska & Caspersen, 1997). Utilizing the compiled physical activity compendium (Ainsworth et al., 2013), mild intensity physical activity was associated with a slow walk that equated to 2.8 METS, moderate intensity physical activity equated a brisk walk of 5.0 METS, and 6.0 METS was associated with vigorous intensity agility training minutes. The chosen METS zones mimicked those utilized by Colley, Garriguet, Janssen, Craig, Clarke, and Tremblay (2011) study on physical activity rates of Canadian adults. Data collected from the physical activity inventory was subjective in nature and self-reported. Therefore, total energy expenditure was expressed as an estimate of energy expenditure. Data missing from the computational aspects (i.e.,

estimated energy expenditure variables) of the quantitative component were discarded using listwise deletion (Roth, 1994). Data missing from SMSII and the BNSSS was dealt with using a mean substitution technique also described by Roth (1994), where the mean of a subscale was calculated and inputted for a missing value.

Based on the amount of energy expended during their agility participation, individuals were placed in one of two categories; higher physical activity achievers (>1000 kcal/week), or lower physical activity achievers (<1000 kcal/week). The only group that was eligible to continue on with component two of the study were those individuals in the >1000kcal/week group. Health research indicates that 1000 kcal generally represents 150 minutes of MVPA (Garber et al., 2011). Therefore individuals who met the physical activity guidelines through agility participation alone were considered eligible participants. Only individuals who engaged in high amounts of agility training are eligible because if health practitioners or agility associations want to see more participation, an understanding of why some individuals engage in higher amounts needs to be developed. Cronbach's alpha values were determined for each of the subscales on both the SMS-II and BNSSS, in order to establish internal consistency of the scales. A series of independent *t*-tests were run with the two groups to determine if they differ significantly in terms of types of motivation and basic psychological needs experienced. Analogous with previous research that utilizes the SDT (Ryan & Deci, 2007), intrinsic motivation, integrated regulation, and identified regulation subscales were averaged to form a score for self-determined motivation (Pelletier & Sarrazin, 2007; Standage et al., 2008). Furthermore, a score for non self-determined motivation was also created by averaging the introjected and external regulation subscales.

Differences between the groups were assessed through the global self-determined and non self-determined subscales and also through the individual forms of motivation. Lastly, a regression analysis was conducted to determine if any of the types of motivation significantly predicted physical activity behaviours (frequency, duration, intensity).

Qualitative. Information collected from semi-structured one-on-one interviews underwent thematic analysis utilizing principles outlined by Braun and Clarke (2006). NVivo software was used to facilitate analysis. Braun and Clarke identified six specific phases of thematic analysis, which included: 1) familiarizing oneself with the data (transcribing); 2) generating codes (identifying interesting features); 3) searching for themes (generating themes that encompass codes); 4) reviewing themes (refining themes); 5) defining and naming themes; and 6) producing a report. There are many sensitizing concepts that guided the interview, mainly the basic psychological needs and various social factors (e.g., perceptions of success/failure, perception of competition and cooperation, influencing interpersonal relationships). As described by Bowen (2006), sensitizing concepts act as the starting points for the qualitative research and may be the aspects that need further exploration.

Various verification strategies were utilized to ensure reliability and validity throughout the qualitative component of the study. Morse, Barrett, Mayan, Olson, and Spiers (2002) described five verification strategies, which together contribute to reliability and validity, and ensure rigor (i.e., the trustworthiness of the data) in qualitative research contexts. The first strategy that was employed was: (1) methodological coherence (methods match research question); (2) choosing an

appropriate sample; (3) concurrent data collection and analysis; (4) theoretical thinking (new ideas are reconfirmed in data); and (5) theory development (open to new theory while also utilizing existing theory). Furthermore, Roulston (2010) identified a number of other strategies specific to the interview process that can ensure quality. Roulston, recommended conducting a pilot study to become familiar with interviewing and the topic of research, which was previously completed (Hulstein & Farrell, 2013). Roulston also recommended utilizing non-leading interview questions and detailing the entire research process in a transparent manner; both strategies were utilized in the current study.

Results

Demographics

A total of 284 agility participants handed in a questionnaire packet over a period of three months, and 233 individuals completely finished the questionnaire packet in component one and were included in the study. Individuals who did not complete the physical activity inventory, and/or the SMSII, and/or the BNSSS were not included in the results. The sample was comprised of 208 females and 25 males. The average age of the sample was 51, with a standard deviation (SD) of 11.8 years. The largest portion of participants fell into the 51 to 60 age group, which contained 26.2% of the sample. The smallest age group was the 18 to 20 bracket, which consisted of two participants. Moreover, 28% of the sample chose not to indicate their age, the majority of these questionnaires were received online. Figure 4 provides a complete breakdown of the age distribution of the sample.

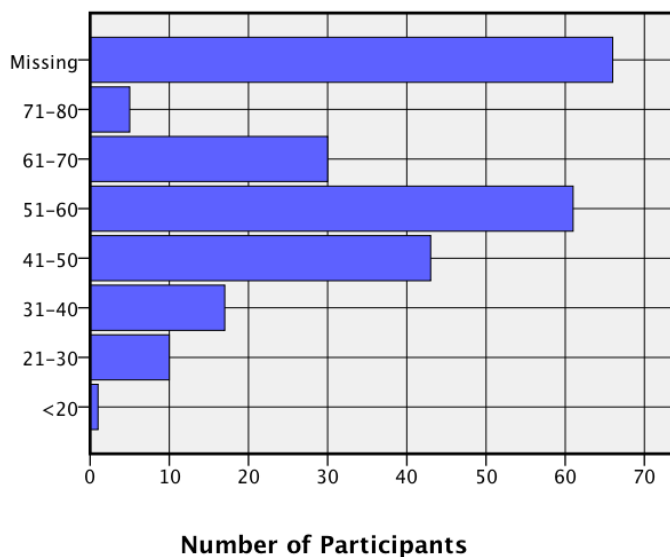


Figure 4.0. Age distribution

Demographic information indicated that 41.2% of the sample had achieved a graduate degree and a further 23.6% had completed an undergraduate degree. Nearly 4% of the sample attended a trade or vocational school and 93.1% of the sample went on to further education after completing high school.

Fifty-five percent of sample resided within a city and the remaining 45% resided in a rural area. Participants primarily lived in the United States ($n = 170$), Ontario ($n = 5$), and Manitoba ($n = 58$). The average self-reported weight of the sample was 159 pounds ± 39.27 . The average body mass index (BMI) score was $25.88 \text{ kg/m}^2 \pm 5.9$. According to Health Canada's BMI classification table, 44.6% of the sample was considered normal range (18.5 to 24.9 kg/m^2), 23.2% overweight (25.0 to 29.9 kg/m^2), and 18.1% obese (30.0 kg/m^2 and over; Statistics Canada, 2010).

Dog Ownership and Demographics

The average number of dogs that participants competed with in agility was two ($SD=.905$), with dog's mean age of 5.05 years. Individuals chose to compete in agility with a varied number of dogs that ranged from one to six. Information was only collected on the first four dogs that participants owned and Table 1 illustrates the self-reported size and energy level of all four dogs. These measures were subjective and relied on the owners perception of their dog(s). Almost half of the dogs were medium sized dogs, as perceived by their owners. In addition, over half of the dogs were perceived to be high-energy dogs by their owners, and only a small number of dogs were believed to have a low energy level. The total amount of dogs owned in the sample was 483 dogs, and seven dogs did not receive a corresponding size from their owners.

Table 1

Reported Size and Energy Level of Agility Dogs

Variable		Dog				Total	
		First	Second	Third	Fourth	Size	Energy Level
Size	Small	67	41	13	4	125	-
	Medium	102	94	32	9	237	-
	Large	63	35	12	4	114	-
Energy Level	Low	6	6	1	2	-	15
	Medium	97	62	20	7	-	186
	High	130	103	40	9	-	282
						476	483

Table 2 illustrates how owners perceived their dogs overall health and also their mobility. Owners indicated if their dog(s) had poor, fair, good, very good, or excellent health and mobility separately. Again, these measures were subjective and relied on the owners perception of their dog(s). Frequencies demonstrated that owners largely believed that all of their dogs were of excellent health and mobility. No dog in the sample was reported to have poor health or poor mobility, seven dogs had fair health, and six had fair mobility.

Table 2

Reported Health and Mobility of Agility Dogs

Reported Health	Dog								Total	
	First		Second		Third		Fourth		Health	Mobility
	Health	Mobility	Health	Mobility	Health	Mobility	Health	Mobility		
Poor	0	0	0	0	0	0	0	0	0	0
Fair	3	2	3	3	1	1	0	0	7	6
Good	16	13	5	7	1	2	1	1	23	23
Very Good	39	37	22	19	5	5	3	3	69	64
Excellent	174	181	141	142	54	53	14	14	383	390
	232	233	171	171	61	61	18	18	482	483

Agility and Physical Activity

Results from the physical activity inventory indicated that the sample had participated in agility for an average of 11.32 years ($SD=5.6$). Some individuals had only participated in agility for one year, while others had participated for up to 24 years. Some individuals did not participate in competitions regularly, while other competitors attended up to 48 weekend long events each year. However, on average, respondents attended 20.87 ($SD=10.04$) weekend long competitions each year. On average the sample attended 62.98 ($SD=39.57$) agility classes each year, the range was fairly broad and some individuals did not attend any training classes. For instance, the maximum number of classes that was attended throughout the year was 205 classes.

Approximately half the sample (52.3%) also participated in agility on a continuous basis throughout the calendar year with no major time off (no more than one month combined). Table 3 describes frequency (number of times each week) of training that took place for both in class and out-of-class settings. Participants tended to engage in more agility training sessions in 'out-of-class' settings (e.g., at home, at a park) than in-class settings ($M=3.11$; $SD=2.57$). Throughout the week, participants engaged in some type of agility training 4.34 times ($SD=2.83$). The average duration of in-class training sessions lasting 63.10 minutes ($SD=19.70$) was far longer than the reported average of out-of-class training sessions lasting 23.95 minutes ($SD=19.16$). The self-reported inventory also indicated that in-class training sessions consisted of primarily mild intensity physical activity ($M=30.45$; $SD=18.84$). Participants reported engaging in more vigorous physical activity ($M=10.16$; $SD=8.51$) during out-of-class training sessions than both mild and moderate physical activity. Altogether, it was calculated that, on average,

participants ($n = 233$) expended 699.52 kcal/week through their agility participation, and the majority of this was done through out-of-class training sessions.

Table 3

Mean and Standard Deviation of Self-Reported Agility Participation ($n = 233$)

Variable	In Class		Out-of-class		Total Agility Participation	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Frequency (times/week)	1.23	.96	3.11	2.57	4.34	2.83
Duration (mins)	63.10	19.70	23.95	19.16	85.83	26.91
Mild Intensity (mins)	30.45	18.84	9.09	7.60	38.87	20.74
Moderate Intensity (mins)	15.86	10.13	9.71	9.21	25.40	14.46
Vigorous Intensity (mins)	12.40	9.34	10.16	8.51	22.29	14.20
Energy Expenditure (kcal/week)	310.16	306.67	389.11	406.71	699.52	551.14

Physical Activity Outside of Agility

Participants self-reported the frequency, duration, and intensity of physical activities they engaged in that did not involve agility. Physical activity was measured according to types that were engaged in with and without a dog. Participants were asked to report six different types of activities they engaged in for both scenarios (e.g., walking, hiking, biking, swimming, dog sport). Sixty-five percent of participants engaged in walking with their dogs and this was the most common form of physical activity that took place in addition to agility training/competition. Many participants' (42%) also partook in other dog sports with their dogs (e.g., obedience, tracking, conformation). Hiking was the third most popular activity (20%) that individuals engaged in with their dogs and this was followed by playing with ones dog (12%), playing fetch (11.5%), and running (10%). The minimum number of hours that individuals participated in physical activity with their dogs ranged from zero to a maximum of 22 hours a week. On average, respondents participated in 4.58 hours ($SD=4.53$) of physical activity outside of

agility each week with their dogs. Respondents participated in more physical activity with their dogs than without their dogs outside agility, engaging in 3.49 hours/week (SD=4.12) of physical activity without a dog. Again, the most common form of physical activity to engage in without a dog was walking (34%). Biking was the second most common type of non-dog physical activity (19%), and this was followed closely by attending a gym (15%), and running (14%).

Differences Between Groups Based on Estimated Energy Expenditure

In order to examine the differences between agility participants who engaged in high and low amounts of agility training, individuals were placed into one of two groups based on their estimated agility related energy expenditure (i.e., >1000 kcal/week or <1000 kcal/week) the estimated amount of kilocalories they burned each week through their agility participation alone. Physical activity research indicates that 1000 kcals approximately represents 150 minutes of MVPA (Garber et al., 2011). Therefore, those who met the physical activity guidelines through agility alone were placed in one group, and those who did not meet the guidelines through their agility participation were placed in another. A total of 52 (22.3% of sample) individuals engaged in high amounts of agility training and were estimated to expend equal to or over 1000 kcal/week (>1000 kcal/week), and 178 participants engaged in lower amounts of agility training, expending less than 1000 kcal/week (<1000 kcal/week). The amount of kcal/week was calculated based on rates of participation in both class settings and out-of-class settings.

Descriptive statistics between the high and low participation groups revealed that those in the >1000kcal/week group were involved in a mean of 1.82 agility classes each week, which was significantly higher when compared to 1.05 classes for the <1000 kcal/group

($t_{(65)}=4.31, p<.001$). In addition, the >1000 kcal/week group engaged in significantly more agility training sessions outside of class each week (5.46 training sessions), while the <1000 kcal/group participated in 2.44 training sessions/week ($t_{(68)}=7.19, p<.001$). Training sessions outside of class were also significantly longer in duration for the >1000 kcal/week group (M=31.35mins) then the <1000 kcal/group (M=21.41mins) ($t_{(212)}=3.34, p<.005$).

Differences on Motivation Subscales In order to determine if the sample as a whole primarily experienced self-determined forms of motivation or non self-determined forms, a dependent sample *t*-test was conducted. By averaging the self-determined forms of motivation (i.e., intrinsic motivation, integrated motivation, and identified regulation) a composite score was created. Additionally, a composite score representing non self-determined motivation was created using introjected regulation, external regulation, and amotivation. Results of the dependent samples *t*-test demonstrated that individuals in the sample experience significantly higher amounts of self-determined forms of motivation ($t_{(232)}=37.41, p<.001$) compared to non self-determined forms of motivation.

A series of eight independent *t*-tests were conducted to explore differences between the two groups on the six forms of the motivation that were measured by the SMSII (Pelletier et al., 2013): (a) intrinsic motivation, which is experienced when an activity is engaged in for pure joy inherent in the activity (Deci & Ryan, 2000); (b) integrated regulation, activity is engaged in out of ones own volition but there is an external motivator present (Deci & Ryan); (c) identified regulation, external motivators are present but an individual has recognized the importance and value in the activity

(Deci & Ryan); (d) introjected regulation, an activity is engaged in because of the presence of internal or external pressures (Ryan & Deci, 2007); (e) external regulation, external pressures are the primary reason for participating in an activity (Deci & Ryan, 2007); and (f) amotivation, the complete lack of motivation or intent to act (Deci & Ryan, 2007). The two composite scores of motivation that were created (i.e., self-determined and non self-determined motivation) were also included in the analysis.

An additional three independent samples *t*-tests were conducted to explore need satisfaction differences between the two groups using the BNSSS subscales: competence, autonomy, and relatedness. Competence represents an individual's need to feel competent and effective within a given situation. Autonomy concerns ones perception of choice and having control over ones actions, and relatedness represents the need for meaningful social interactions. Mann-Whitney *U* statistics were calculated when an independent *t*-test did not meet the homogeneity of variance assumption. The alpha value for each comparison was adjusted to .004 using Bonferroni's correction. Table 5 illustrates the results from all *t*-tests. A significant difference was found for intrinsic motivation for the >1000 kcal/week group. Both identified regulation, and self-determined motivation variables were significant for the >1000 kcal/week group prior to applying Bonferroni's correction. The >1000kcal/week group had significantly higher scores for intrinsic motivation, suggesting that individuals who expend more energy in agility may also experience more self-determined motivation. Means were not drastically different between the two groups on intrinsic motivation, and means were more pounced on identified regulation but no significance was found. Means from the subscales indicated that both groups of agility participants experienced low amounts of

non self-determined forms (i.e., combined score of 2.22 out of a possible 7) of motivation and high degrees of need satisfaction (i.e., combined score of 5.70 out of a possible 7). In addition, Table 5 illustrates that both groups of competitors perceive a high amount of need satisfaction while engaging in agility with their dogs, as these means were out of a best possible of seven.

Table 4

Summary of Results from t-tests Comparing Motivation Variables for those who Train Higher Versus Lower Amounts

Motivation Variable	Agility Participants		Result	
	>1000kcal/week ^a	<1000kcal/week ^b		
	\bar{x} (SD)	\bar{x} (SD)	t/U	p
SMS II				
Intrinsic Motivation	2.94 (1.19)	2.77 (1.05)	3321.5~	.001*
Integrated Regulation	4.33 (1.59)	4.04 (1.38)	-1.31	.191
Identified Regulation	5.06 (1.48)	4.49 (1.68)	-2.19	.030
Introjected Regulation	2.94 (1.19)	2.77 (1.05)	-.982	.327
External Regulation	1.54 (0.89)	1.63 (0.77)	.71	.482
Amotivation	1.13 (0.43)	1.23 (0.53)	4370~	.384
Composite Subscales				
Self-Determined	5.52 (1.07)	4.77 (1.16)	-2.62	.009
Non Self-Determined	2.24 (0.96)	2.20 (0.76)	-0.31	.755
BNSSS				
Competence	5.78 (1.07)	5.73 (0.90)	4231.5~	.595
Autonomy	6.17 (0.74)	6.01 (0.79)	-1.24	.216
Relatedness	5.19 (1.26)	5.34 (1.11)	0.80	.423

^an=50. ^bn=178

* $p < .004$

Internal Consistency of the SMS and BNSSS

Cronbach's alpha was calculated to determine the internal consistency of each of the subscales in both the SMS and BNSSS. Determining the internal consistency was a necessary step as all of the subscales included in the questionnaire packet were

modified slightly to suit participation in agility. Table 4 provides an overview of the mean, standard deviation, and Cronbach's alpha values for each of the subscales in the questionnaires. Table 4 illustrates that within the SMS, intrinsic motivation, integrated regulation, identified regulation, and self-determined motivation subscales were all above the acceptable level ($>.7$) according to George and Mallery (2003). The amotivation subscale and the non self-determined motivation composite subscale are in the questionable range ($<.7$) but within acceptable limits for reliability (George & Mallery, 2003). Both the introjected and external regulation subscales are considered to have 'poor' reliability but were above the unacceptable value of $<.6$ (George & Mallery).

Cronbach's alphas for the BNSSS, with the exception of the Autonomy – Volition subscale, were all considered in the acceptable range ($>.7$). The Autonomy – Volition subscale is categorized as acceptable ($>.5$). Similar to the SMS II subscales, previous research that has utilized the BNSSS has created a composite score for autonomy which combines the Autonomy – Choice, Autonomy – Internal Perceived Locus of Causality (IPLOC), and Autonomy – Volition subscales (Ahmadi, Namazizadeh, & Mokhtari, 2012). The three autonomy subscales were combined in this case to create a composite subscale of autonomy and it retained a good reliability score ($>.8$).

Analogously, both the relatedness and competence subscales were determined to have good reliability scores ($>.8$). With no unacceptable subscales, results from this analysis indicated that both the SMS and BNSSS maintained internal consistency with a sample of agility participants.

Table 5

Mean, Standard Deviation, and Cronbach's Alphas Reliability Coefficients for the SMS and BNSSS

Variables	<i>M</i>	<i>SD</i>	Cronbach's α
SMS			
Intrinsic Motivation	5.92	1.08	.86
Integrated Regulation	4.09	1.44	.74
Identified Regulation	4.62	1.65	.82
Introjected Regulation	2.81	1.08	.55
External Regulation	1.61	0.79	.52
Amotivation	1.21	0.51	.68
Self-Determined Motivation	4.88	1.15	.86
Non Self-Determined Motivation	2.21	0.81	.67
BNSSS			
Competence	5.74	0.94	.86
Autonomy – Choice	5.54	1.22	.87
Autonomy – IPLOC	6.10	0.87	.77
Autonomy – Volition	4.86	0.54	.57
Autonomy – Combined Subscale	6.05	0.78	.85
Relatedness	5.30	1.14	.86

Predicting Physical Activity Behaviours

To investigate the possibility of predicting physical activity behaviours (e.g., duration, frequency, intensity) in a dog sport environment, multiple sequential regression analyses were conducted. Multiple sequential regression allows variables to be entered into the equation in a specified order, and enables a researcher to observe how a particular variable or set of variables add to the regression model. Multiple tests were conducted in this case to control for the effects of age, weight, and total volume of physical activity with and without a dog. The variables that were being 'controlled for' (i.e., age, weight, and non-agility related physical activity) were added in step one, and predicting variables (e.g., self-determined and non self-determined motivation) were

added in step two. Preliminary analysis identified that each form of motivation on the SMS contained minimal predicting ability. No model was able to significantly predict the hypothesized physical activity behaviours of duration or intensity. However, it was found that the self-determined motivation and non self-determined motivation composite subscales were able to significantly predict in-class energy expenditure, out-of-class energy expenditure, and frequency of overall agility participation. Table 6 illustrates the various results from the regression analyses, including the total significance of the models, the amount of variance that is explained in each step, and the variables that were significant contributors. As Table 6 illustrates, the amount of energy that was expended (kcal/week) during in class agility sessions was positively predicted by both age and weight. However, the addition of the motivation variables within the same model accounted for an additional 3.6% of the variance for in class energy expenditure. Out-of-class energy expenditure (kcal/week) was also positively predicted by weight, the addition of self-determined motivation and non self-determined motivation was able to increase the explained variance by 4.1%, with self-determined motivation being a significant positive predictor. Finally, total frequency of agility participation (i.e., number of sessions a week both in-class and out-of-class) was not significantly predicted by any variables in the first step. The inclusion of self- and non self-determined motivation in the second step increased the overall predicting ability of the model to 9%, with an R square change of 7.2%. In the second step weight became a positive predictor of total frequency, along with self-determined motivation.

Table 6

Summary of Hierarchical Regression Analysis for Predicting Physical Activity Variables

Independent Variable	R^2	ΔR^2	β	t
In class energy expenditure (kcal/week)				
Step 1: $F_{\text{Change}}(4,162) = 3.21, p < .05$.073			
Age			.159	2.10*
Weight (lbs)			.218	2.85*
Volume of activity with a dog (hrs/week)			-.030	-0.39
Volume of activity without a dog (hrs/week)			.011	0.14
Step 2: $F_{\text{Change}}(6,160) = 3.27, p < .05$.109	.036		
Age			.183	2.43*
Weight (lbs)			.251	3.20*
Volume of activity with a dog (hrs/week)			-.028	-0.36
Volume of activity without a dog (hrs/week)			.016	.217
Self-Determined Motivation			.160	1.72
Non Self-Determined Motivation			.053	0.58
Out-of-class energy expenditure (kcal/week)				
Step 1: $F_{\text{Change}}(4,162) = 1.85$.044			
Age			.020	0.26
Weight (lbs)			.182	2.34*
Volume of activity with a dog (hrs/week)			.131	1.68
Volume of activity without a dog (hrs/week)			-.025	-0.32
Step 2: $F_{\text{Change}}(6,160) = 3.27, p < .05$.085	.041		
Age			.039	0.51
Weight (lbs)			.232	2.93*
Volume of activity with a dog (hrs/week)			.124	1.61
Volume of activity without a dog (hrs/week)			-.025	-0.33
Self-Determined Motivation			.235	2.50*
Non Self-Determined Motivation			-.055	-0.60
Frequency of agility participation (sessions/week both in class and out-of-class)				
Step 1: $F_{\text{Change}}(4,162) = .73$.018			
Age			.133	1.70
Weight (lbs)			.197	0.84
Volume of activity with a dog (hrs/week)			-.005	-.06
Volume of activity without a dog (hrs/week)			.002	0.03
Step 2: $F_{\text{Change}}(6,160) = 2.65, p < .05$.090	.072		
Age			.154	2.02*
Weight (lbs)			.087	1.09
Volume of activity with a dog (hrs/week)			-.017	-0.23
Volume of activity without a dog (hrs/week)			.000	-.004
Self-Determined Motivation			.324	3.46*
Non Self-Determined Motivation			-.111	-1.20

* $p < .05$

Qualitative Inquiry

To examine the various social and environmental factors in the sport of agility that may affect the motivational sequence (social factors/environmental factors → perceptions of basic needs → motivation → physical activity consequences; Vallerand & Losier, 1999) interviews were conducted with six female and one male competitive agility participants. A total of 23 individuals were asked if they would like to participate in component two and seven individuals responded positively, for a response rate of 30%. Some individuals chose not to participate because of time constraints and others were nonresponsive. All seven participants were identified as engaging in high amounts of agility and expended equal to or over an estimated 1000 kcal/week through agility alone. Figure 5 represents the higher and lower order themes that were perceived to influence motivation via the motivational sequence and based off of the work conducted by Vallerand and Losier. Four higher order themes: (1) competition; (2) social; (3) team; (4) and individual factors, each contained lower level themes that will all be identified and discussed in detail.

1) Competition. All of the interviewed individuals enjoyed the competitive aspect of agility. Participants felt that the progressive nature of the sport always provided competition, no matter what level they were currently participating at. Competition factors included aspects of the sport that created challenge (e.g., evolving sport, goal aspirations, ranking), and differences in venues (hosting organization) influenced individuals' participation decisions.

Challenge. Participants felt that the challenge inherent in the sport of agility kept them involved for years of participation. Participants described an overarching challenge that enveloped the sport as well as challenge

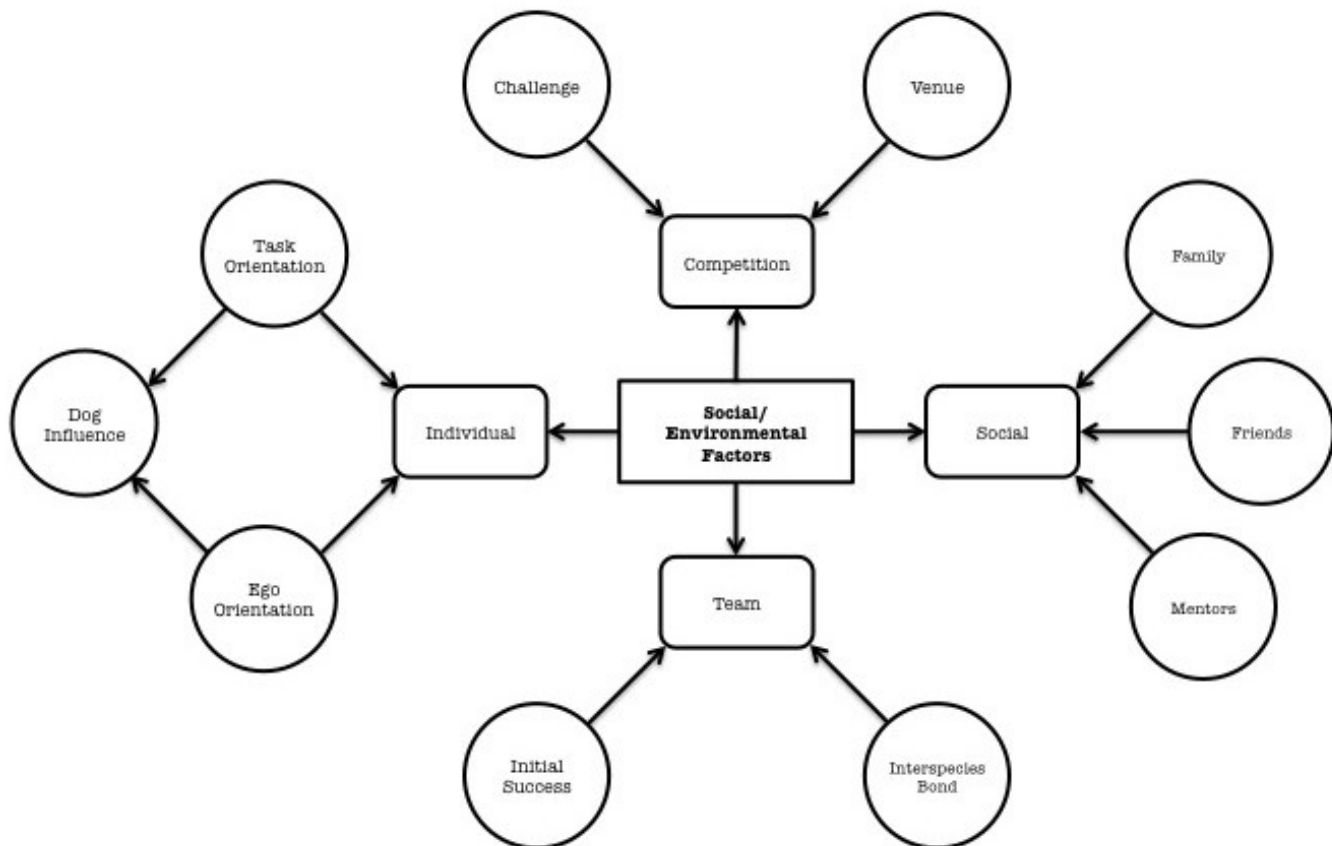


Figure 5.0. Thematic map of qualitative responses

relating to goals, ranking, physical aspects, and the evolving nature of the sport. It was believed that the challenge the sport possessed kept individuals committed and they did not see an end to their participation, especially because the sport is continuously evolving. One participant said that he/she and others were addicted to the sport because “there’s always another challenge, so you can never really master it” – P1. A like-minded participant also mentioned that “every single year, you know you see new challenges and...I really love seeing the sport expand and making it not so much harder

but really inspiring the competitors to do better and adopt more goals” – P6. Other participants believed that attempting to place well in terms of rank provided the challenge that kept them involved, for instance, “in this sport, there are a lot of good dogs, a lot of good dogs, in this weekend alone, think about it. This is the top of the top. Not everybody is here and you still have 60 or 70 dogs in large class. You only have 1 winner per round” – P2.

Venue. Individuals who participate in agility, depending on their location, have a choice of organizations or venues to compete in. A few of the more popular organizations include AKC, CKC, USDAA, NADAC, CPE, and AAC. Each venue has its own unique set of rules and procedures that surround competition, in addition to different agility events/classes, obstacles, and titles. Individuals noted that their participation decisions were partly based on the qualities (e.g., number of classes, events, runs, chance of success) of the different venues. One respondent felt that competition in AKC was rather constricting while in the “USDAA, every single run offers some sort of opportunity for something” – P7. The same interviewee believed that he/she was “moving away from it [AKC] just because they don’t offer as many classes to run during the day. So there is less variety. Whereas USDAA there is more variety and I am gravitating towards that” – P7. Another respondent’s account also corresponded, “people are just wanting their double Qs and that’s basically all you have to work for [in AKC], but in USDAA you have your game classes, your tournament classes, regular classes, and I think it’s just a different vibe with people who compete there” – P6.

2) Individual. Certain individual aspects also played a role in how they engaged in agility, especially in terms of the goals they adopted while competing. Participant responses clearly reflected a task orientation, in that they chose to focus on goals grounded in self-improvement and overall successful completion of the agility course. Other answers focused more on social comparisons where goals concentrated on placements and being the best in each class they entered. Regardless of individuals' orientation, their dog(s) also influenced the amount they participated, the specific goals they chose, and how they viewed success.

Task Orientation. Competitors who adopted task orientation goals believed that they were motivated by goals that involved competition which was directed internally. For instance, "I don't care if I beat people, you know, other handlers, I'm just trying to execute to the best of my ability the skill that I've learned and I know, and I am really competing against myself" – P4. The same respondent also noted that, "I'd say I'm competitive, but I'm not there to try and beat you or Bob, I'm there to beat myself." In other cases, respondents indicated the various types of training goals that they would adopt while training and competing. For example, one participant explained that he/she embraced "training goals much more than competition goals. Absolutely, and routinely they change. You know like right now, her [dog] recent training goal is managing her contacts more quickly and efficiently because if she ages, she's going to slow down and I'm going to see that transition so I'm going to need to speed up in areas where she can get some time" – P5.

Ego Orientation. Some agility participants also maintained an ego-oriented state in that they chose to focus on being competitive with others in the sport and adopt

placement or title goals. For example, one competitor perceived success as “winning a trophy, getting that first place, getting that blue ribbon, and that’s success, yes” – P2. Other respondents chose to adopt goals, such as, “to get into the finals again, that was my big big [emphasis added] goal” – P3. In a similar response the same individual noted, “my next goal is with my Cavalier, starting in July they have what they call invitational and you have to be the top 5 in your breed and then you get invited to go to this invitational. So that’s my goal next year, starting in July to see if I can get him into the top 5” – P3. Comparably, P7 stated that success is “being a dog that can win class at anytime, if everything goes right. I guess that would be my personal definition at this time.”

Dog Influence. Competitors found that their canine companions also influenced their participation in a few key ways. Owning the right dog that excelled in the sport was a necessary component to keep competitors engaged - “I think I was very lucky, I had the good dogs to get me addicted” – P6. In a similar notion another competitor felt that, “they [the dogs] both feed off that energy when they see me running. And that’s a big/huge reason why I’m in it and still in it is cause the dogs I’ve had. Otherwise, I don’t know, maybe it wouldn’t have been to this degree, where I’m actually going for like, world team tryouts, and going to nationals” – P2.

Furthermore, regardless of their personal type of achievement orientation (e.g., task or ego), competitors all discussed how their perception of success and goals could depend on the dog. Some respondents stated that their goals “depend on the dog, my one dog is very, has a lot of ability and my goals are with him to be in finals, is to make it into finals at the two national events in the upcoming year. And I have a young dog

and my goal is to get her moving up the chain...Getting her to the next level, and then slowly over the next six months starting to put more and more” – P5. Or in a similar response by the same individual, “I think I define success differently for each dog.” Owners also discussed how their perception of the sport changed after a dog has passed. For instance, “since my more competitive dog died last February and I just got scared....I kinda had to like re-evaluate what I liked about it because I’m not going to have that competitive edge anymore” – P7.

3) Team. Aspects of team collaboration conceivably played a role in the social environmental factors in agility. Many of the interviewed participants described some aspect of early or initial success in dog sports and/or agility that fueled their desire to participate. The bond that developed between dog and owner through training and competing was also deemed a critical aspect of the sport that kept participants engaged.

Initial Success. Competitors involved in the interview component of the study had been involved in agility from 6 to 18 years. However, one aspect that they all had in common was success, which came in a few different ways. For example, qualifying at their first trial, or simply finding that training a dog came naturally to them. Success for many respondents came very early in the sport, and it was generally experienced in their first agility competition they entered. For instance, one individual who started in the sport very young remembered, “I was like 9 or 10 years old at the time but I knew like I wasn’t good enough to do it like fully yet but I could do part of a course. I did qualify on my first round, I do remember that, I was very excited” – P6. Another competitor recalled his/her start in agility, at “my very first nationals I went to, I got into the finals,

and I placed fourth. And I thought....ohhhh, I hit my peak a little early” – P3. The same participant also remembered going to his/her first “trial and in three days I got all my titles, and I got all first places”. Other participants just remembered being overall good at the sport from the very beginning of their careers, “from the very beginning we were actually pretty good, by the time I started showing him I’d been involved in agility for two years” – P2.

Interspecies Bond. The bond that developed between dog and owner through training and competing was also believed to play a social/environmental factor that contributed to the motivational sequence. Individuals perceived that the interspecies bond that forms is one of the reasons they continue to participate – “we worked together for so long as a team and he always, he loved everybody but he always wanted to be with me because he wanted, he loved that bond. So, for me I guess that was, the competitiveness was great and all and I really do like competing but that bond was really strong... cause you work with them constantly. The competitiveness and just the bond has always been the two things” – P2. Other competitors felt that the bond that develops is one of the major draws the sport has to offer. For instance, “if they love their animals, its another way to make your bond even stronger...if I’ve been training Lily all day, she’ll spend all of her time with me, versus trying to play with the other dogs” – P6.

4) Social. Lastly, respondents believed that their social relationships also had an impact on their agility participation motivation. Social influences were perceived to stem from friends (other competitors), family members who were involved in the sport or in a supporting role, and mentors who were mainly agility instructors.

Friends and other competitors. All respondents identified with meeting many new friends who were likeminded individuals, in that they all enjoyed the sport of agility. Agility was also seen largely as a social event, both the training and competing side of the sport. One competitor noted that the friends he/she made in agility, “definitely motivate me to go. I made a lot of friends” - P6. Another respondent believed that individuals were involved in the sport largely because of, “the companionship, friendship, we’re in the trenches together kind of thing. The local level...we’re eating out together. It’s a big component of it” – P1. In a similar response, another competitor stated, “ it’s a hobby and I think we get into hobbies as a social part and I like the social part of meeting people and, you know, people from other parts of the country or hooking up with students and stuff at different shows” – P4. Another respondent noted, “oh yeah, tons of like, in fact life long friends because of this sport. Definitely. I mean there’s people that I know now, that I trust completely that I never, there is no way that I would have met them, other than from the dog sports. As simple as that” – P2.

Family. Having family involved in the sport provided a motivational force for many competitors in the sample as well. For instance, “it helps that my Mom is in it too because it gives us something to do together” – P6. When asked if there was anyone who influenced the amount they participated in agility, another competitor stated, “it’s not just even my friends, I got my Mum, who is also pretty involved in it” - P7. In a similar situation, “my daughter runs a dog so, it’s one of those things you, even with an adolescent aged person they love the sport, you love the sport, you have something in common and you can go just have fun” – P5. Receiving social support through family members who were not involved in running dogs was also an important factor as one

participant noted, “for me, [I’m] very, very, very lucky that my husband is very supportive and he’s you know at home taking care of the rest of the dogs. So you know I had to travel every weekend and because I own seven dogs, I wouldn’t be able to do it as much because I would have to take seven dogs with me every weekend” – P4.

Mentors. Mentors also had a profound affect on individuals’ participation. Mentors usually came in the form of instructors who were looked up to and provided trusted training advice. Some participants did the majority of their training on their own but did follow the advice of trusted mentors, “most instructors are a lot younger than me and they want me to run really fast and when I do I just pull my muscles. So I said [to myself], I know how to train and so [a renown trainer] sent us stuff to work on so I hit the fields and I worked on it myself” – P3. Another competitor believed that his/her friend was an influential member in his/her agility participation, “I have a friend that I have looked up to for a long time, just a really really really good handler. I guess, his opinion matters to me probably more than most...it can be anything from like how you think you should handle this part of the course, if I’m on the right track for training my dog” – P7. Other individuals felt that their mentors were influential at the beginning of their agility careers but their importance declined as they progressed through the sport. For example, “there’s a time when people go through the classes and they have a mentor but it isn’t really until they break away from that mentor, saying, no, this is what I need on my dog, these are my limits, this is what my dog’s limits are, and I’m going to train in that zone” – P1.

Discussion

Social and Environmental Influences in Agility

The qualitative elements of the study allowed for an exploration into the social and environmental factors in agility that may influence the motivational sequence amongst agility competitors. The quantitative aspects of the study provided insight into a number of secondary objectives, while also providing support for the various social/environmental factors associated with the sport of agility. In light of the preliminary nature of this exploratory study, the qualitative aspect only included individuals who participated in higher amounts of agility training. Previous research that utilized Vallerand and Losier's (1999) motivational sequence demonstrated that there are a number of social and environmental factors within physical activity settings that can influence the basic psychological needs, motivation, and exercise outcomes. For instance, research has demonstrated that factors such as: task/ego-oriented environments (Sarrazin et al., 2002; Quested & Duda, 2010; Rienboth & Duda, 2006), goal orientation (Deci & Ryan, 2000; Rawsthorne & Elliot, 1999; Reimer & Thomas, 2005) types of competition (Tauer & Harachiewicz, 2004), success/failure (Vallerand & Losier, 1999), and peers (Vazou, Ntoumanis, & Duda, 2005) have an impact on the motivational sequence. Previous research that has utilized the motivational sequence has adopted a quantitative approach, which may exclude other relevant social/environmental factors. Therefore, the purpose of the qualitative component in the current study was to explore whether these social/environmental influences, or other factors, would present themselves within the sport of agility. Various secondary objectives were also explored primarily through the quantitative component of the

current study. These secondary objectives are addressed and integrated throughout the various sections in the discussion.

Similar to previous studies, task and ego orientation (Deci & Ryan, 2000; Rawsthorne & Elliot, 1999; Reimer & Thomas, 2005), success/failure (Vallerand & Losier, 1999), and peers (Vazou et al., 2005) were all identified to be social and environmental influences that had a presence amongst agility participants, thus providing support for previous literature in this area. Other factors that influenced participation included: the influence of the dog, the unique interspecies bond, aspects of challenge, differences in venue, family members, and mentors.

Challenge in Sport

Competition has been found to influence motivation in physical activity contexts (Tauer & Harachiewicz, 2004). Participants in the current study all noted that they found agility to be a very competitive sport, and that this is one aspect that they really enjoyed about it. Respondents described certain aspects of the competitive environment that influenced their participation and how they felt about their experiences in agility. For instance, many participants believed that they remained committed to the sport and participated in it because of the challenge that accompanies the competition. Challenge was perceived in multiple areas of the sport. Some participants mentioned the challenges that are faced through new and evolving obstacles that teams must train to conquer, while other participants enjoyed the challenge that was provided by competing against other teams in the sport. Ryan and Deci (2000b) stated that it is in our nature as humans to seek out challenges, and that optimal challenge has been found to positively influence levels of intrinsic motivation. Results from the present sample indicated that

those who engage in higher amounts of agility also experience more intrinsic motivation, perhaps these individuals are also experiencing optimal levels of challenge. Optimal challenge being that one's ability/skill is appropriate to the task at hand (Guadagnoli & Lee, 2004). Tauer and Harachiewicz (2004) also noted that competition during activities can present participants with an exciting challenge that increases involvement and therefore intrinsic motivation. Frederick-Recascino and Ryan noted in their 1995 study that intrinsic motivation is facilitated by challenge, which is readily available in sporting environments. Frederick-Recascino and Ryan mentioned that challenges within sporting contexts need to be optimal, or intrinsic motivation will consequently suffer. Based on these findings, within an agility context, participants who engage in higher amounts of activity are more likely experiencing an optimal degree of challenge through their participation. One unique element of agility is that the sport contains multiple levels of competition that participants can progress through. The higher the level of competition, the more challenging the course becomes and this factor may be why individuals stay intrinsically motivated to participate for an extended period of time. Optimally, as an individual engages in a certain sport or activity for an extended period of time, he/she will become increasingly competent with the skills involved. When an individual has become overly competent with the skills involved through sustained practice and longevity in a sport, he/she may begin to feel under challenged and progression declines (Baker, Horton, Robertson-Wilson, & Wall, 2003). Within agility settings, before this sensation of being under challenged occurs, participants are most likely ready to progress to the next level and on the cusp of achieving the required number of qualifying rounds. Focusing on this time point in of agility may allow competitors to

experience higher amounts of optimal challenge because they will not feel under challenged for long periods of time. Deci and Ryan (2000) also support this notion that optimal challenge within any setting is important to consider because it will positively influence intrinsic motivation. Another aspect that differentiates agility from other more traditional sports is that individuals are participating alongside a dog, and one human participant can train and compete with multiple dogs at once. Moreover, a dog contains fewer competitive years than a human, meaning that one human can potentially train multiple dogs throughout his/her agility career. These aspects allow participants to constantly face new challenges because they could be training at different levels with different dogs, and they may go through the training process with many different dogs over their career.

Harachiewicz (2004) and Frederick-Recascino and Ryan note (1995) that challenge may influence intrinsic motivation within sport settings and results from the SMS II in the present study concur with this notion. The inherent degree of challenge in agility may have facilitated the intrinsic motivation experienced by participants in the current study because results indicated that participants experienced both challenge and intrinsic motivation. On average, participants had much higher scores for the self-determined forms of motivation (i.e., intrinsic motivation, integrated regulation, identified regulation) than non self-determined forms of motivation (i.e., introjected regulation, external regulation, amotivation). Qualitative results indicated that these individuals largely participate in agility because of the joy and challenge that is inherent in the sport, and that agility is closely aligned with their personal values. Self-determined forms of motivation are important in physical activity settings because individuals who

experience these forms of motivation demonstrate increased adherence to physical activity programs (Deci & Ryan, 2002; Ryan, Frederick, Lepes, Rubio, Sheldon, & 1997). High levels of self-determined forms of motivation may also explain high rates of continuous participation because less autonomous forms of motivation lead to greater instances of drop out in physical activity environments (Ryan et al., 1997). In the present study, the sample exhibited commitment to the sport and had participated for an average of 11 years, indicating that adherence to the sport may be a positive consequence due to self-determined forms of motivation that participants experience.

Similar to results from previous research regarding adherence and intrinsic motivation, Kirkland, Karlin, Babkes Stellino, and Pulos (2011) noted that a high degree of need satisfaction is also a positive indicator of adherence in physical activity settings. Individuals in the present study have been involved in agility for an average of 11 years and some had participated for up to 24 years, which indicates a certain degree of commitment to the activity.

Exploring the forms of motivation and perceptions of need satisfaction was an objective in the present study. Quantitative results from the BNSSS revealed that, on average, participants' perceptions of autonomy, competence, and relatedness were high in the present study. A high degree of need satisfaction would also further support the high levels of self-determined forms of motivation observed in the present study, as it is the needs themselves that underlie these forms of motivation (Kirkland et al., 2011). High degrees of self-determined motivation coupled with high rates of need satisfaction would also lend further support to the proposed motivational sequence (Vallerand, 1997; Vallerand & Losier, 1999) as higher forms of motivation are more likely

experienced when these three basic psychological needs are met (Deci & Ryan, 2000). McEwan and Sweet (2012) illustrated that when individuals perceived 'need supportive' exercise environments they also experienced greater levels of self-determined forms of motivation, and less non self-determined forms.

Experiencing optimal challenge (task at hand is appropriate for skill level; Guadagnoli & Lee, 2004) in agility settings may lead to many different positive outcomes in terms of motivation. Individuals are more likely to experience self-determined forms of motivation (Frederick-Recascino and Ryan, 1995), which have been linked to positive physical activity behaviours such as adherence (Ryan et al., 1997). The present sample identified a high degree of need satisfaction, which has also been linked to adherence and self-determined forms of motivation (Kirkland et al., 2011; Ryan & Deci, 2007). Although it is preliminary in nature, the challenge aspect of the sport, high level of need satisfaction and motivation, and the high degree of participation does provide some support for Vallerand's (1997) motivational sequence.

The Venue Influence

There are many agility organizations that competitors can choose to be involved with and each venue has its own rules, procedure, and competitive structure. The venues themselves were another social/environmental factor that seemed to influence the motivational sequence amongst participants. Overall competitors tended to gravitate towards venues that offer more options for competition (e.g., more classes/levels, games, and runs per day) and overall success. Participants tended to favour these venues because they were able to have more opportunities to feel success. For instance, individuals who competed in both the USDAA and AKC associations were

interviewed and if there was an AKC and USDAA competition on the same weekend the USDAA event would be attended because of the increased competitive opportunities. According to Ryan and Deci (2000b), the need for autonomy, competence, and relatedness must be satisfied in order for self-determined motivation to flourish. Autonomy represents the need to experience choice in mastery over one's decisions (Ryan & Deci, 2002). Patall, Cooper, and Robinson (2008) found through a meta-analysis that having more choices has a positive effect on intrinsic motivation. Patall et al. (2008) noted that choice can also impact other activity related outcomes such as effort, task performance, perceived competence, and preference for challenge. Interviewed individuals in the present study reported enjoying the venues that offered more choices to competitors because it granted them more opportunities to compete, have fun, and experience success.

According to the interviewees, venues that offer more chances to experience success are also seem to place more emphasis on participation. Kavussanu and Roberts (1996) noted that performance environments that place emphasis on participation and mastery of skills are creating a task oriented motivational climate that is associated with intrinsic motivation. Task oriented motivational sport climates provide greater opportunities for participants to experience competence, which can positively influence intrinsic motivation (Kavussanu & Roberts, 1996). Employing Vallerand and Losier's (1999) motivation sequence as a theoretical backbone, it may be that venues that offer more competitive options and opportunities for success create an environmental factor that can influence motivation via fulfilling the basic psychological needs of autonomy and competence. The notion that venues may, in fact, have an

impact on participation and can be an influential social/environmental factor is also partially supported by the reported levels of need satisfaction. Overall, respondents perceived that their basic psychological needs of autonomy, competence, and relatedness were met through their agility participation. The fact that participants have a choice concerning the venue in which they compete could largely influence their perception of autonomy, which, in turn, may influence their perception of competence because they may experience more achievement. The influence of venue on need satisfaction may also impact levels of self-determined motivation and adherence within the agility setting. Incorporating more competitive opportunities in agility (e.g., more games like gamblers and snooker) is one factor that venues may be able improve upon in order to attract and retain participants, while simultaneously supporting increased participation in the sport.

Individual Differences and Motivation

According to Vallerand and Losier (1999) success and failure within a sport environment can influence the motivational sequence. Vallerand and Losier state that failure-based feedback can negatively impact competence, and motivation, where success-based feedback can boost competence and increase motivation. Within the sport of agility, receiving failure/success feedback occurs fairly quickly and will happen when an individual discovers if he/she received a qualifying score or not. However, not every competitor competes in agility for the same reasons and he/she may also have different perceptions of success and failure. Kowal and Fortier (2000) mentioned that individuals' perception of success will influence the basic psychological need of competence and therefore also motivation. All competitors interviewed had a personal

vision of success and they reported adopting either an ego-orientated version of success or a task-oriented version. Through the thematic analysis process, these two types of goal orientation were described as individual factors that represented social/environmental factors that influenced the motivational sequence. It was apparent that individuals who adopted an ego-oriented goal perspective believed that success concerning their placement was relative to other competitors. Whereas, competitors who adopted a task-oriented perspective chose goals that focused on self-competition and personal improvement. Individuals interviewed could not be classified as either task or ego orientated because no assessment was provided, but individual participants did describe which orientation they adopted through the semi-structured interview.

Hassandra, Goudas, and Chroni (2003) conducted a qualitative inquiry into factors that influence motivation in high school physical education settings, and found that students had individual goal orientation differences. Specifically, Hassandra et al. (2003) noted that students adopted either a task or ego orientation. Reimer and Thomas (2005) found in their study on goal orientations amongst competitive dog obedience participants that the majority were task oriented. Reimer and Thomas noted that a large number of task oriented participants is a reflection of the sport because it is extremely hard to master. Furthermore, due to the difficulty of the sport, before being able to express more ego goal orientated qualities, individuals first have to find satisfaction through learning, improvement, and practice, which are more task oriented qualities. Wang, Chatzisarantis, Spray, and Biddle (2002) noted in their study on achievement goal orientation in physical education environments that individuals who adopted a task orientation were more likely to experience self-determined motivation. They also found

that those who experienced self-determined forms of motivation had the highest activity level. Duda, Chi, Newton, Walling, and Catley's (1995) study on goal orientation and motivation in sport also found that those who reported being more task oriented scored higher on intrinsic motivation. Moreover, those who were considered ego orientated scored lower on intrinsic motivation (Duda et al., 1995). Contrarily, Shafizadeh's (2007) study indicated that ego orientation was still a significant positive predictor of intrinsic motivation, but not as strong as task orientation. Furthermore, Biddle, Soos, and Chatzisarantis (1999) found that intention for physical activity behaviours was best predicted by "ego orientation, through perceived competence and identified and intrinsic regulation" (p. 88). Although the present study did not measure goal orientation with empirical methods, individuals did describe their orientation through one-on-one interviews.

The present sample largely reported self-determined forms of motivation and those who engaged in high amounts of agility described either ego or task orientated mentalities. Therefore, collectively, the results are more congruent with research presented by Shafizadeh's (2007) and Biddle et al. (1999), in that both types of orientation were related to intrinsic motivation, although future studies may wish to explore this further in a quantitative manner. The individuals interviewed engaged in very high amounts of agility participation and competed at fairly high levels. According to their quantitative results, these individuals also experienced high levels of intrinsic motivation and need satisfaction but they described both types of goal orientations. Within agility and amongst highly active agility participants, both ego and task goal orientations are social/environmental factors that may influence the motivational

sequence, and ultimately physical activity behaviours. Respondents interviewed described adopting both an ego and task goal orientation and they also described their dog as being an influence on their orientation.

Influence of the dog on goal orientation. One unique theme in the present study that was deemed prominent by interviewees was the influence of the dog on competitors' motivation and goal orientation. Participants felt that their dog was a source of motivation that kept them engaged in the sport. Furthermore, it was stated that handlers and dogs in agility seem to have a reciprocal relationship where both parties feed off the others energy and enjoyment for the sport, which keeps the handler engaged. Participants noted that they generally had the 'right' dogs for the sport, and this could be part of the equation that encourages them to participate in higher amounts of agility. Furthermore, even though interviewed participants perceived success in agility slightly differently from one another, this vision often differed in relation to their dog or dogs. Many competitors train and compete with multiple dogs and this encouraged the adoption of different achievement goals depending on the dog they were working with. For instance, individuals who described an overall ego orientated goal perspective may choose more task oriented goals if they were working with a dog that was not as competitive in their eyes. Participation in agility through goals that do not reflect an individuals' goal orientation (i.e., a clean run) could be a reflection of the emotional attachment to the dogs as described by Baldwin and Norris (1999). According to Baldwin and Norris, there is a large amount of emotional attachment to dogs in dog sport that leads to excessive resource spending (e.g., time and money). Baldwin and Norris found that individuals involved in dog sport believed that, "dogs reflected who

they were, their values, and their lifestyle” (p. 13). Along with what to spend their resources on, this emotional attachment may spill over into other areas of competitors’ lives and influence the types of goals that are chosen and how they view success. For example, individuals may be primarily ego-oriented and want to beat others but their dog does not currently have the capacity to beat others so they choose more task oriented goals (e.g., not missing any contact points, not knocking down any bars).

The influence of the dog may also help explain why some individuals engage in high amounts of agility and are more likely to experience intrinsic motivation. Results indicated that individuals who expended more than 1000 kcal/week through agility experienced significantly higher levels of intrinsic motivation. Individuals in the >1000kcal/week group also reported higher levels of identified regulation that approached significance. Intrinsic motivation is generally a reflection of the positive feelings received through participation, which stems from the interesting and satisfying nature of the activity (Deci & Ryan, 2008). It may be the case that individuals who engaged in high amounts of agility find the activity more enjoyable, or find that the sport is more in line with their personal values. Moreover, interviewed individuals also reported having the right dog for the sport and perhaps they also experienced happiness vicariously through their dogs. Higher degrees of identified regulation amongst more active participants may also reflect a certain degree of internalization, where participants are autonomously motivated while still experiencing some type of extrinsic motivation. Deci and Ryan (2008) describe identified regulation as a form of internalization where individuals can adopt the importance inherent in an activity that may not have been previously important. In accepting the importance and values in an

activity they take personal responsibility for engaging in it. The influence of the dog may also come into play here. For instance, one interviewed individual was ambiguous about the sport when he/she first participated but he/she quickly realized that his/her dog enjoyed it and was good at it. In this case, the level of enjoyment and talent exemplified by his/her dog influenced his/her levels of enjoyment and supported his/her decision to continue with the sport. Therefore, it could be possible that individuals who participate in higher amounts of agility with their dog have accepted and internalized the values in the activity to a greater extent.

It was clear through the interviews that both task and ego goal orientations were individual determinants of the motivational sequence and were social/environmental factors that influence participation. However, whether individuals who participate in agility at a competitive level are primarily ego or task oriented is unclear at this time. It is clear that competitors' dog(s) themselves were factors that influenced the motivational sequence for individuals who engage in high amounts of agility. The notion that participants interviewed adopted different goals depending on the dogs they were working with also presented a unique avenue that warrants further exploration.

Interspecies Bond

Competitors believed that the team aspect of agility provided them with an opportunity to form and enhance the bond with their canine training partner. According to the qualitative results, the bond that formed between human and dog was an aspect of the sport that kept participants involved and enjoying the activity. Although no study has explored how this bond influences motivation for physical activity in a sport context, recent research has assessed how the human/pet bond impacts general physical

activity. Andreassen, Stenvold, and Rudmin's (2013) study explored the health benefits of attachment to one's dog and found a positive correlation between pet attachment and how many hours participants walked their dogs. Andreassen et al. (2013) also stated that individuals who reported more pet attachment experienced more physical and mental health benefits. Stephens et al. (2012) reported high levels of pet attachment in their sample, which consisted primarily of highly educated women. It was also noted by Stephens et al. (2012) that dogs might act as a surrogate support network for physical activity, specifically walking. The Stephen et al. (2012) study also aligns with research presented by Street, James, and Cutt (2007) who noted that dogs can act similar to workout partners in physical activity settings. Although Andreassen et al. looked at dog-walking behaviour, the strong bond reported by individuals interviewed might also support more participation in agility related physical activity in a similar fashion.

An objective in the present study was to explore the amount of physical activity achieved through agility. The average amount of time spent engaged in agility at moderate to vigorous intensity each week was 96.6 minutes, and 16.7% of the sample managed to meet or exceed the Canadian physical activity guidelines of 150 minutes of moderate to vigorous physical activity (MVPA) per week through their agility participation alone. However, many health research articles agree that 150 minutes of moderate to vigorous physical activity equates to 1000kcal/week (Garber et al., 2011; Warburton et al., 2006), and 22% of the sample met this criteria. Considering that 22% of the present sample met their physical activity needs through agility alone is quite significant because only an estimated 15% of Canadian adults achieve the recommended amount of physical activity each week (Colley et al., 2011). Agility seems

to be a sport that does require a certain degree of physical activity and it appears to contribute positively to participants accruing the recommended amounts of physical activity. Agility may be an activity that health practitioners want to explore in more detail as a means of physical activity, especially for females between the ages of 40 and 60 years.

The quantitative results indicated that participants expended nearly 700 kilocalories (kcal) per week through their agility participation. Participants also believed that they spent most of their time engaging in agility at moderate and vigorous intensities. Warburton et al. (2006) stated that the majority of health and fitness organizations recommend that all adults should expend a minimum of 1000 kcal per week through physical activity. Recently, Warburton et al. (2010) reported that there are health benefits attained even when achieving low volumes of physical activity, and that all physical activity is good, but increased amounts leads to more health benefits. Compared to the physical activity guidelines (CSEP, 2011), on average, participants achieved 70% of the recommended amount of physical activity alone. The current sample was an estimated 300 kcal short of the 1000 kcal per week marker, and although the golden marker was not reached, agility did contribute positively to their physical activity trends.

The interspecies bond that forms between dog and owner may also explain, in part, the unique demographics that are seen in the sport of agility. For instance, the majority of the sample (90%) was female, which is a trend that has been reported by two other dog sport studies (Hultsman, 1998; Riemer & Thomas, 2005). The mean age of the present sample was 51 years, and the vast majority of participants (45%) fell into

the 41 to 60 age group. Previous dog sport samples have also reported that the majority of dog sport participants are older adults (Baldwin & Norris, 1999; Gillespie et al., 2002; Hultsman, 1998; Reimer & Thomas, 2005). When compared to national sport participation trends, the unique gender and age characteristics of the sample stand out. For example, Canadian Heritage (2013) reported that men participate in sport more than women and that sport participation decreases with age. The current sample defies both of these sport participation trends, which is a positive indicator for the sport because it may be allowing individuals to be active, who otherwise might not be. The interspecies bond that forms may be an influential factor amongst this demographic that pulls them towards the activity, keeping them engaged in agility for extended periods of time. More research is warranted to explore these relationships specifically.

Individuals in the present study reported experiencing a high degree of need satisfaction, and the interspecies bond may, in part, be responsible for this. Specifically, participants spoke of their dog and the intense bond between them; this bond may have influenced their perception of relatedness. Ryan (1995) describes relatedness as feeling connected to other individuals. Thus, it would seem logical that this strong owner/dog bond that was described in interviews may in fact support or contribute to feelings of connectedness and influence perceptions of relatedness. Research by Stephens et al. (2012) and Street, James, and Cutt (2007) also describe how dogs can act as a social support system that can influence the amount of physical activity individuals achieve.

The powerful bond that forms between dog and handler may be an explanation for the high amount of dog-related physical activity as suggested by previous research (Andreassen et al., 2013; Stephen et al., 2012; Street et al., 2007). When considering

the high degree of need satisfaction and self-determination in the current study, and the high amount of time and energy spent on agility participation, it stands to reason that the interspecies bond that forms between human and dog can be classified as a another unique social/environmental factor present within agility.

Perceptions of Success

Along with perceptions of success and goal orientation as apparent social/environmental influences on motivation, it also became apparent that all participants interviewed experienced high levels of initial success in agility. Immediate success in the sport seemed to fuel excitement and increased participation through the adoption of more challenging goals. Reeve and Deci (1996) conducted a study on how competition affects intrinsic motivation and found that winning a competitive situation facilitated intrinsic motivation. Furthermore, Reeve and Deci also found that intrinsic motivation suffered when other individuals placed pressure on competitors to win; performance feedback (e.g., acknowledgement of a win) seemed to be a major factor that fostered intrinsic motivation. Grouzet, Vallerand, Thill, and Provencher (2004) induced success and failure amongst study participants and found that individuals who experienced success perceived higher levels of autonomy, competence, and self-determined motivation. Grouzet et al. (2004) also provided objective performance feedback in their study and it was believed that this was the underlining reason for the positive impact on the basic psychological needs and motivation. The sport of agility can be very performance oriented and performance feedback is provided on every trial in multiple forms. For instance, a judge is present on the agility course at all times and monitors each competitor for faults. In most cases, if a fault occurs, the judge uses hand

signals or a whistle to communicate to scribes who record the faults, time, and overall result. A competitor on the course will know he/she has made an error if a whistle is heard, a signal seen, or he/she may inquire if an error was made upon the completion of the run. Typically, handlers are directing their dogs and focusing on their movements and will know if an error has been made.

Even though questionnaire data in the present study demonstrated that the entire sample reported some degree of self-determined motivation, certain individuals ($n=52$) engaged in higher amounts of agility related physical activity. Individuals who were interviewed noted that they achieved good competition-based results early on in their agility career; thus, this positive feedback could have been a valuable social/environmental factor that initiated a positive motivational sequence. Both Grouzet et al., (2004) and McAuley, Wraith, and Duncan (1991) suggested that success within physical activity settings positively influences perceptions of competence and therefore, also intrinsic motivation. Previous research has also revealed the positive effect intrinsic motivation has on the physical activity behaviours of frequency, duration, and intensity (Deci & Ryan, 2002; Duncan et al., 2010; Edmunds et al., 2007; Standage et al., 2008; Wilson et al., 2004). The notion that competitors who experience early success in agility also engage in the sport more frequently may be an indication that success is a social/environmental factor that influences the motivational sequence at a fundamental level. Agility organizations may be able to facilitate feelings of success if they were also to provide some degree of positive feedback after each run because, according to Grouzet et al. (2004), this could positively influence need satisfaction and motivation. This may be possible by entering individuals who want to start competing (e.g.,

beginners) in a different category that employs unique judging criteria. For instance, both judges and trainers could be present to provide feedback on faults made but also some positive feedback on elements that were performed well.

The Social Side of Agility

Vallerand and Losier (1999) stated that a coach's behaviour can influence the motivational sequence among athletes. In particular, the more an athlete perceives his/her need for relatedness to be present in the athlete/coach relationship, the more intrinsic motivation he/she should experience. In their review, Vallerand and Losier also mentioned that this influence can extend beyond a coach position and encompass a wide range of individuals who occupy leading roles (e.g., teachers, parents).

Furthermore, individuals who occupy leading roles and utilize an autonomy-supportive style of leadership or direction foster higher amounts of intrinsic motivation, while those who employ a controlling style of leadership have been found to thwart self-determined forms of motivation (Hollembek & Amorose, 2005; Vallerand & Losier, 1999).

Hollembek and Amorose (2005) also stated that autocratic coaching behavior (i.e., coach makes all decisions) can negatively impact the basic psychological need of relatedness. In the same study, positive feedback from coaches significantly predicted all three basic psychological needs of relatedness, competence, and autonomy.

However, Hollembek and Amorose also noted that social support from a coach did not predict feelings of relatedness amongst athletes, and one of the posited reasons for this was the number of different ways an athlete can receive social support (e.g., emotional support, esteem support, informational support, tangible support).

In the present study, respondents interviewed clearly felt that the social aspect of agility kept them engaged in the sport and fueled enjoyment as well. Individuals described their relationship with some type of coach, mentor, or instructor that either provided them some type of support currently, or as an influential member in their initial agility career previously. Much of the support they seemed to gain through a mentor was advice and instructional in nature which resembles informational social support (Hollembeak & Amorose, 2005). In an agility context, a mentor/instructor provides the same type of direction and leadership that a coach or teacher might, and they could also employ different leadership styles. In this sense, mentors in the agility context could easily impact the motivational sequence by influencing a participant's basic psychological needs of competence, relatedness, and autonomy. One possible direction for future research may be assessing the influence of mentor/instructor leadership style on motivation using more experimental methods.

Ntoumanis and Biddle (1999) noted that coaches, leaders, parents, and peers in sport contexts all create a motivational climate, and it is this type of climate that influences motivation. Ntoumanis and Biddle explained that a motivational climate will predominantly be a mastery oriented motivational climate or a performance oriented motivational climate. A mastery oriented motivational climate places emphasis on effort, improvement, and individual progress. Contrarily, a performance oriented climate focuses on social comparisons and winning (Ntoumanis & Biddle, 1999). Research in this area has identified that physical activity contexts that are predominantly mastery oriented tend to foster more self-determined forms of motivation and enjoyment and performance oriented climates diminish intrinsic motivation (Kavussanu & Roberts,

1996; Ntoumanis & Biddle, 1999). Ntoumanis, Vazou, and Duda (2007) moved away from the coach's influence on the motivational climate and focussed on how peers within sport settings influence the motivational climate. Their review indicated that peer motivational climates within sport contexts influences motivation amongst youth. In terms of motivational climates, interviewed individuals seemed to be attracted to venues that mimicked mastery climates that provided them more opportunities to hone their skills. Agility organizations may want to consider this notion further and design more mastery appropriate climates because this may foster increases self-determined forms of motivation and more participation.

Although this area of research appears to have involved youth athletes thus far, adult athletes who participated in the interview component of the current study also indicated that peers play a large role in their participation. Participants noted that family members were another factor that kept them engaged in the sport and influenced their motivation. Carron, Hausenblas, and Mack (1996) stated that family members are an influential factor when it comes to physical activity and that their support increases adherence. Wilson and Rodgers (2004) agreed with Carron et al. (1996) and stated that family members can influence exercise decisions and also motivation for exercise. Individuals indicated that their peer and family relationships within the sport of agility supports their participation and that the social component is very important. Ntoumanis et al., (2007) developed the Peer Motivational Climate in Youth Sport Questionnaire (PeerMCYSQ), which measures athletes on five factors that determine the motivational climate that is developed by ones peers. The five motivational climate factors are

improvement, relatedness support, effort, intra-team competition and ability, and intra-team conflict.

Future research may be able to determine the type of peer motivational climate within the sport of agility and how the climate influences motivation. The PeerMCYSQ is one measure that may be appropriate to use to capture the motivational climate in agility. Quantitative results of the present study found that the sample experienced more self-determined forms of motivation compared to non self-determined forms of motivation through their agility participation. However, certain individuals within that self-determined population managed to engage in higher amounts of training and participation. It may be that social support is part of this explanation and that individuals who have more social support or perceive a more positive peer motivated climate engage in higher amounts of the sport. However, further research that is more empirical in nature is required to infer any causality. Resnick, Orwig, Magaziner, and Wynne (2002) utilized an older adult population (adults over 65 years of age) in their research and found that social support from friends had the largest impact on exercise behaviour amongst older adults. Furthermore, Keegan, Harwood, Spray, and Lavallee (2009) noted in their qualitative report on motivational climate amongst early career sports participants that sports hold potential to foster the basic psychological needs of autonomy, relatedness, and competence. Keegan et al. (2009) believed that coaches, parents, and peers all played a part in this equation. It may be posited that peer relationships within an agility setting have an influence on the motivational sequence when present results are combined with Vallerand and Losier's (1999) study, and previous research concerning peer motivational climates. Friends were a significant

theme generated from responses in the interview and this social/environmental factor should be explored further through more empirical methods in future research.

Research by Park and Kim (2008) also identified that social support from one's peers and family is able to predict physical activity behaviours. Furthermore, forms of self-determined motivation and the three basic psychological needs have also been able to positively predict physical activity behaviours (Duncan et al., 2010; Ntoumanis & Duda, 2006; McEwan & Sweet, 2012; Standage et al., 2008; Wilson et al., 2004; Wilson et al., 2004). To date, it appears that all of the studies using the SDT in prediction models have used a physical activity context or exercise context and none have utilized sport as the environment of choice.

Predicting Physical Activity Behaviours

One of the secondary objectives of the present study was to explore the feasibility of predicting exercise behaviours in the sport of agility using the SDT as a theoretical framework. Previous literature has illustrated that various forms of motivation, as they appear in the SDT, have the ability to predict physical activity behaviours (frequency, duration, intensity) in an exercise environment (Duncan et al., 2010; Ntoumanis & Duda, 2006; McEwan & Sweet, 2012; Standage et al., 2008; Wilson et al., 2004; Wilson et al., 2004). An objective in the current study was to explore the same predicting variables but in a dog sport environment. It was found that no individual form of motivation was a strong predictor of physical activity behaviours. Comparatively, Duncan, Hall, Wilson, and O (2010) found that integrated regulation was a significant predictor of exercise frequency and duration amongst males and females. In addition, identified regulation was a significant predictor of frequency for both males and females, but introjected was

the only significant predictor of intensity for females. Edmunds, Ntoumanis, and Duda's (2006) study noted similar results and found that introjected and identified regulations were able to predict strenuous exercise behaviour and intrinsic motivation was not able to predict exercise. In the present study individuals reported high levels of identified regulation but it was not a significant predictor. Future studies may wish to explore these values further to understand why identified regulation was highest reported form of motivation reported in terms of means. Contrary to previous research which has primarily focused on younger adults and general exercise settings, the present context was a sport setting with a unique demographic population that consisted of mostly females who were older adults. Previous literature has addressed adults and older adults motivation towards exercise (Teixeira et al., 2012), to the authors knowledge no study has explored these concepts with an older adult population within a sport setting. Perhaps the unique population and the untraditional nature of the sport (when compared to other traditional sports) means that physical activity behaviours cannot be predicted in the same manner as previous research.

In the present study, individual forms of motivation (e.g., intrinsic motivation, identified regulation) were not able to predict physical activity behaviours. However, the composite score of self-determined motivation was able to predict the total amount of energy expended through out-of-class training sessions. The total amount of energy expended through out-of-class training was achieved through a combination of frequent, short, and intense training sessions that enabled participants to expend more energy than in class training. Self-determined motivation was also able to positively predict the total frequency of participation in agility (both in class and out-of-class settings). Within

the sport of agility, self-determined forms of motivation appear to support more participation, which is also similar to Duncan, Hall, Wilson, and O's (2010), research, as they also found that more self-determined forms of motivation were able to predict frequency of exercise. The frequency of participation in physical activity settings holds importance because being active more often yields enhanced health benefits. For instance, O'Donovan et al.'s (2010) review noted that a single bout of activity can improve various health markers (e.g., blood pressure, insulin sensitivity, lipid and lipoprotein) from 24 to 48 hours.

Previous research has focused on the relationship between self-determined motivation and frequency of participation in an exercise setting. Determining a positive association between self-determined motivation and frequency of agility participation is an advancement for research that concerns dog sports and physical activity. Future researchers may wish to explore whether the positive association between self-determined motivation and frequency of participation extends to sports outside of agility.

Conclusion and Future Directions

The present study was a preliminary and exploratory study into the social/environmental factors within agility that influence the three basic psychological needs, motivation, and physical activity behaviours. This was the first study of its kind, in that it explored the social/environmental influences in the motivational sequence as proposed by Vallerand and Losier (1999) using a mixed methods approach. It was also the first study to utilize the SDT, the SMS II, and the BNSSS within a dog sport setting. The study provides a backbone that future studies can build upon through experimental methods, or apply the knowledge gained to other dog sports.

Results from this study illustrate that adults who compete in agility with their dogs experience high levels of self-determined motivation (intrinsic motivation, integrated regulation, and identified regulation) and lower levels of non self-determination (introjected regulation, external regulation, and amotivation). These results supported the second hypothesis proposed. Levels of need satisfaction (autonomy, competence, and relatedness) were also high amongst these agility participants, which is congruent with the SDT. In other words, individuals who experience high levels of self-determination while engaging in an activity should also perceive that their three basic psychological needs are being met because they are the antecedents of motivation (Ryan & Deci, 2007). The likelihood of experiencing intrinsic motivation was also higher amongst the agility competitors who engaged in higher amounts of the sport. This notion provided partial support for the third hypothesis, which posited that those who are more self-determined achieve more physical activity. Higher intrinsic motivation was also associated with increased agility related energy expenditure, as these individuals

engaged in more agility training, and sessions that took place out-of-class settings were longer in duration, providing further support for the third hypothesis. The fourth hypothesis was also partially supported because physical activity measures of frequency and energy expenditure within agility were positively predicted by self-determined motivation. These findings illustrate the importance of developing self-determination in physical activity settings. Agility organizations could potentially use the social/environmental elements explored within this study to facilitate self-determination amongst their participants and encourage participation. Health professionals could also use these findings and examine whether these social/environmental influences occur within other physical activity settings. Enhancing frequency of participation in physical activity endeavors would be a valuable method to improve overall rates of physical activity amongst adults. Moreover, the quantitative results also supported the motivational sequence as proposed by Vallerand and Losier (1999). For instance, participants perceived high amounts of need satisfaction which supported self-determined motivation, and the most effective form of motivation (i.e., self-determined motivation) was associated with positive physical activity behaviours (e.g., frequency, total energy expenditure). Based on the present study, physical activity interventions grounded in a SDT theoretical framework and within an agility context would be a valuable endeavour for future research. Due to the unique influence of the dog within dog sports, exploring how the dog (e.g., size/breed) influences rates of physical activity in agility and other dog sports may be another valuable avenue of research. Moreover, individuals in the present study were all considered competitive agility participants, but there is still a large range of handler skill represented. Future research may wish to

explore how handler skill relates to motivation and also to physical activity variables because skill perception is part of competence (Deci & Ryan, 2000)

Results from the demographic questionnaire collected in component one indicate that the majority of participants in the present sample were female ($n=208$). The notion that agility and other dog sports are predominantly female dominated is further supported by previous research (Baldwin & Norris, 1999; Reimer & Thomas, 2005). However, the lack of male participant in the present study also reduces the generalizability of results. Even though both male and female participants were included, the results should only be generalized to other female agility participants. Future research may wish to address the gender discrepancy within the sport of agility or other dog sports, or consider females and males separately.

To date the SDT has not been applied to a dog sport setting and this preliminary study provides a valuable foundation for future studies to build from. Acknowledging that the tenets of the SDT are associated with increased physical activity opens the door to future studies that can assess how we can increase participation within the sport. Participation in the sport itself had positive implications on individual's physical activity profile because an average of 700 kilocalories was expended through agility participation alone. It was hypothesized that, on average, the majority of individuals would meet the physical activity guidelines (CSEP, 2011) through their agility participation, and in fact, 22% of the sample met this criteria. Although the majority of the sample did not meet the physical activity guidelines, the percentage of individuals who did is higher than the national average of 15%, suggesting that agility is helping individuals meet the recommendations. The measure to capture agility related physical

activity behaviours in the present study was a self-reported measure, which is a limitation that future studies may wish to address. Research indicates that self-reported measures of physical activity may either under or over report physical activity and they may also suffer from response bias (i.e., social desirability; Prince et al., 2008). There was also a large range of participation rates and understanding why some individuals engage in lesser amounts of agility would be a valuable step for future research. Exploring the social/environmental factors expressed in the present study using more experimental methods may shed light on this prospect. Furthermore, understanding the barriers that suppress participation may allow practitioners and agility organizers to facilitate change within individuals and the sport structure itself.

To explore why some individuals experienced more intrinsic motivation and participated in higher amounts of agility participation, the present study turned to Vallerand and Losier's (1999) integrated approach to motivation and motivational sequence. The motivational sequence states that basic psychological needs, motivation, and motivational consequences (e.g., physical activity behaviours) are all theoretically preceded by various social and environmental factors within individual settings. The interview component of the present study provided support for many social/ environmental factors that have been previously explored, for instance: goal orientation (Sarrazin et al., 2002), success/failure (Kowal & Fortier, 2000), and peers (Vallerand & Losier, 1999). Additional social/environmental factors were also identified as being influential within an agility environment (e.g., dog influence, interspecies bond, challenge, and venue). Those who engaged in higher amounts of agility participation found that the challenge of the sport drew them to it. Previous research has associated

appropriate levels of challenge with self-determined forms of motivation and also adherence in physical activity settings, which partially fits into the motivational sequence as proposed by Vallerand and Losier (1999). Differences in venue also appeared to influence participation behaviours and motivation amongst those interviewed. Venues that offered more choices concerning competition types/levels and opportunities for success were favoured. The venues that provide these characteristics may be positively influencing participant's perception of autonomy and competence. Future research may wish to expand on this finding because these elements of the sport can be manipulated by the individual organizations to encourage participation. For instance, agility organizations could introduce more agility games (e.g., snooker, gamblers), provide more positive feedback, or introduce even more levels of competition suitable for beginners. Because all agility organizations are different, future research may also compare the different organizations and profile the types of competitors in each using concepts from the SDT and Achievement Goal Theory (e.g., goal orientation, motivational climate). A comparison study could provide more information into whether a particular organization is fostering more self-determined motivation and increased rates of physical activity.

Congruent with previous research, individual goal orientation was also an apparent social/environmental factor. It was posited that individual goal orientation was also flexible within the sport of agility and the dog was an influential factor. In other words, an individual would put their dog first and set aside their own goal orientation (i.e., ego or task orientation) and adopt goals that suited their dog(s). Depending on the dog that competitors were working with, they adopted different perceptions of success. Exploring

the goal orientations amongst competitive agility participants with empirical measures and assessing how the dog can influence goals and perceptions of success would be an apparent next step.

The dog became another important factor when participants considered initial success in the sport (e.g., attain a qualifying ribbon in their first trial) and other team aspects, such as the bond between teammates (canine and human). Agility was perceived as a team sport and it required both parties to perform well for success. Individuals who participated in higher amounts of the sport generally experienced early success in it. Early success was largely due to a dog that had a natural aptitude for the sport and owners possessing a knack for training dogs. Success in the sport may be associated with increased participation, perseverance in the sport, and motivation for the sport. Considering the potential impact of success, assessing how participants can experience more success early on in their career is another avenue for future research to explore. For instance, agility organizations could assess the possibility of incorporating new levels of competition that are combined with more positive feedback. In essence, agility associations may want to develop agility climates that are more mastery nature so participants are encouraged to work on elements like personal bests and mastering skills. The interspecies bond that forms between teammates was another apparent social/environmental factor that has not been previously reported. Preliminary links have been made between pet attachment and general physical activity (e.g., walking) but this link has not been empirically explored within a sport setting. Individuals reported engaging in the activity because of the bond that forms and can be continuously worked on. The results from the interview component demonstrate that

agility associations are excelling in certain areas because participants are feeling challenged and they have a social outlet through sport. However, interviews also revealed that agility associations could begin to provide more opportunities for success by offering more variety, and this may in turn facilitate more self-determined forms of motivation. Future research may wish to explore the effects the interspecies bond has on physical activity behaviours within dog sport settings because of the potential health benefits these activities appear to provide.

Similar to previous research concerning physical activity contexts (Carron, Hausenblas, & Mack, 1996; Vallerand & Losier, 1999), various elements of the agility environment were social/environmental factors that influenced participation. The three main sources of social influence described by participants stemmed from family, friends, and mentors. Participants felt that the social side of agility is a major component that keeps them engaged and enjoying agility. Moreover, having family and friends involved in the sport created a supportive and comfortable environment. Based on the qualitative findings, family, friends, and mentors also create a motivational climate that is specific to agility and it is a climate that most likely fosters self-determined forms of motivation and positive physical activity behaviours. Understanding and measuring the precise motivational climate using empirical methods (e.g., PeerMCYSQ; Ntoumanis et al., 2007) may shed more light on the association between climate and outcomes. The most obvious pathway whereby friends and family may influence the motivational sequence is via the basic psychological need of relatedness (Deci & Ryan, 2000). Feeling connected with other individuals while engaging in agility most likely influences perceptions of relatedness and this was also supported by the results of the BNSSS. Moreover, the

presence of supportive mentors within the sport may be the factor that stimulates a positive perception of all three needs because these individuals provide training guidance, advice, and friendship in many cases.

In order to explore the social/environmental factors in agility that influence motivation amongst those who participate in high amounts of the sport, a grouping factor was employed. After participating in component one individuals were placed in one of two groups based on agility energy expenditure: low amounts of agility participation ($<1000\text{kcal/week}$), and high amounts of agility participation ($>1000\text{kcal/week}$). Fifty-two individuals were placed in the high amounts of agility participation group. One factor that could not be determined through the present study was whether these individuals engaged in higher amounts of agility because of motivation, or whether these individuals were simply more active individuals overall. Although, non-agility related physical activity was assessed in the present study, a conclusive analysis of these variables could not take place without more objective measures. Future studies may wish to utilize objective tools (e.g., portable metabolic cart) to measure physical activity both in agility and outside of agility to address this question, and to explore the amount of energy expenditure within agility more precisely.

Overall, the sport of agility is a form of physical activity that warrants further exploration. Assessing the sport of agility through a Self-Determination Theory lens provided a basis for an exploration into the social/environmental factors that may influence some individuals to engage in higher amounts of the sport. Individual, social, team, and competition related factors influenced participants motivation for the sport. These social/environmental factors may influence participants perception of the three

basic psychological needs, motivation, and ultimately how much they engage in the sport. Health practitioners and agility associations may wish to explore these social/environmental factors further because they may be a way to increase participation in the sport and help improve the health of participants. Vallerand and Losier's (1999) integrated motivation framework was a valuable tool in the analysis of the motivational sequence and applying this to other sports to explain physical activity behaviours is recommended for future research.

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List of Appendices

Appendix A: Organizer Letter

Appendix B: Component One Participant Information Letter

Appendix C: Component One Informed Consent

Appendix D: Demographic Questionnaire

Appendix E: Physical Activity Inventory

Appendix F: Sport Motivation Scale II

Appendix G: Basic Needs Satisfaction in Sport Scale

Appendix H: Contact Information Sheet

Appendix I: Component Two Participant Information Letter

Appendix J: Component Two Informed Consent

Appendix K: Interview Protocol